

Chapter 4: Assessment of Solid Waste Management Needs

The County balances a variety of competing demands to address its solid waste management needs. This chapter identifies County solid waste management needs and outlines a plan direction to address those needs. In considering how best to address County solid waste management needs, this chapter also provides an assessment of current conditions and constraints as well as existing programs and facilities designed to accommodate the solid waste generated within the County.

Acronyms and solid waste terms used in this chapter and throughout this document are defined in Appendix A.

The County manages solid wastes in accordance with the following objectives:

- The County implements solid waste management practices that are both environmentally and fiscally sound and that provide reliable long-term solutions to County solid waste management needs;
- The County funds the solid waste management system through a mechanism that provides a secure, sufficient, and equitable source of funds to enable the County to operate an integrated waste management system of waste reduction, recycling, and disposal; and
- The County solicits and includes concerns of the public at an early stage and throughout the solid waste management decision-making process.

This chapter is organized into the following subsections:

- 4.1 Management Needs: Municipal Solid Waste
- 4.2 Management Needs: Special Waste Streams
- 4.3 Constraints on New Solid Waste Acceptance Facilities
- 4.4 Solid Waste Outreach, Education and Promotion
- 4.5 Investigation of Compliance Issues and Enforcement of Recycling Regulations
- 4.6 System Approach to Greenhouse and Ozone-Related Emissions

4.1 MANAGEMENT NEEDS: MUNICIPAL SOLID WASTE

As presented in Chapter 3, approximately 1,249,376 tons of MSW were generated in the County during Fiscal Year 2008 and 1,418,462 tons are projected to be generated in FY 2019. To address its waste management needs, the County employs the following techniques: (1) waste reduction; (2) recycling and composting; (3) resource recovery; and (4) landfilling. All of these components are interrelated and integral to the County's solid waste management system. The success of one element within the system is often dependent on the successful implementation of others. An understanding of this interdependence is critical to the fiscal and operational health of the system.

4.1.1 Waste Reduction

Waste reduction is the preferred method in the County's solid waste management hierarchy. Reductions in waste generation lessen the burden of solid waste management by decreasing the amount of material entering the system. The County's waste reduction plan includes the following elements.

4.1.1.1 Per Capita/Per Employee Waste Generation

Current Conditions and Constraints: The Department projects future waste generation based on M-NCPPC projections of future population and employment growth and on the Department's best professional assessment of per capita and per employee waste generation trends. Notwithstanding assumptions in per capita and per employee waste generation rates, the County must aggressively implement waste reduction and recycling programs.

Needs Assessment and Plan Direction: The County must regularly and systematically monitor waste per capita and per employee generation trends to refine waste generation projections. On-going monitoring and periodic revision of actual waste generation rates will assist the County in evaluating the need for adjustments to the solid waste programs in accordance with the zero growth policy.

4.1.1.2 Waste Reduction Information and Programs

Current Conditions and Constraints: The County promotes waste reduction through consumer education and technical assistance using various media, including development, production and distribution of educational and promotional materials, public and private schools outreach, training and support of recycling and composting volunteers, workshops, demonstrations and seminars. The central elements of this effort are the SORRT Program (Smart Organizations Reduce and Recycle Tons), and the TRRAC Program (Think Reduce and Recycle at Apartments and Condominiums) (see Section 4.4.1 of this Plan). These programs provide waste reduction, recycling, and buying recycled guidance to the commercial and multi-family sectors.

The County provides drop-off locations at the Shady Grove Processing Facility and Transfer Station for yard waste, reusable construction materials, computers, textiles and other materials.

Needs Assessment and Plan Direction: The County will continue to promote waste reduction through resident and consumer education and business technical assistance. Both national and local data indicate trends toward increased waste generation. Should multi-year trends indicate changes in overall waste generation, the County will adjust its baseline per capita and per employee generation assumptions.

4.1.1.3 Waste Reduction Opportunities in County Government

Current Conditions and Constraints: The County adopted an Environmental Policy on July 29, 2003, promoting recycling, waste minimization, energy conservation and environmentally responsible business practices for all of its own departments and agencies. Waste reduction and reuse efforts in its operations include installing two-sided copying machines in many offices and promoting the use of electronic mail in place of paper memoranda. In addition to two-sided copying, and use of e-mail in education, outreach and training efforts provided throughout County, M-NCPPC, MCPS, WSSC and other facilities, DEP advocates and encourages a “Just in Time” ordering system, a “First-in First-out” use policy, establishing inventory control procedures, date-stamping incoming materials, routing of printed materials, posting of employee notices, and use of durable, reusable items such as cloths for cleaning, ceramic mugs, durable cups, etc.

Needs Assessment and Plan Direction: Opportunities remain for the County to reduce its waste generation, particularly office paper from offices, schools, service centers and other public facilities. The County will attempt to serve as a model for the community by implementing its Environmental Policy to perform its mission while producing less resulting waste.

4.1.1.4 Regional Waste Reduction Efforts

Current Conditions and Constraints: The County participates in regional efforts to promote waste reduction, including those involving the Greater Washington Metropolitan Council of Governments, the MDE, the Maryland Recyclers' Coalition and other regional entities. Coordination of efforts also occurs within the MDE County Solid Waste and Recycling Managers groups. The County monitors and supports appropriate State and national legislative initiatives on waste reduction.

Needs Assessment and Plan Direction: Large scale waste reduction involves modifications in consumer and commercial behavior. Effecting this type of change often involves adjusting economic and societal behavior that extends beyond the boundaries of the County. A regional approach toward waste reduction will permit the leveraging of resources and increased effectiveness.

4.1.1.5 Waste Reduction Incentives

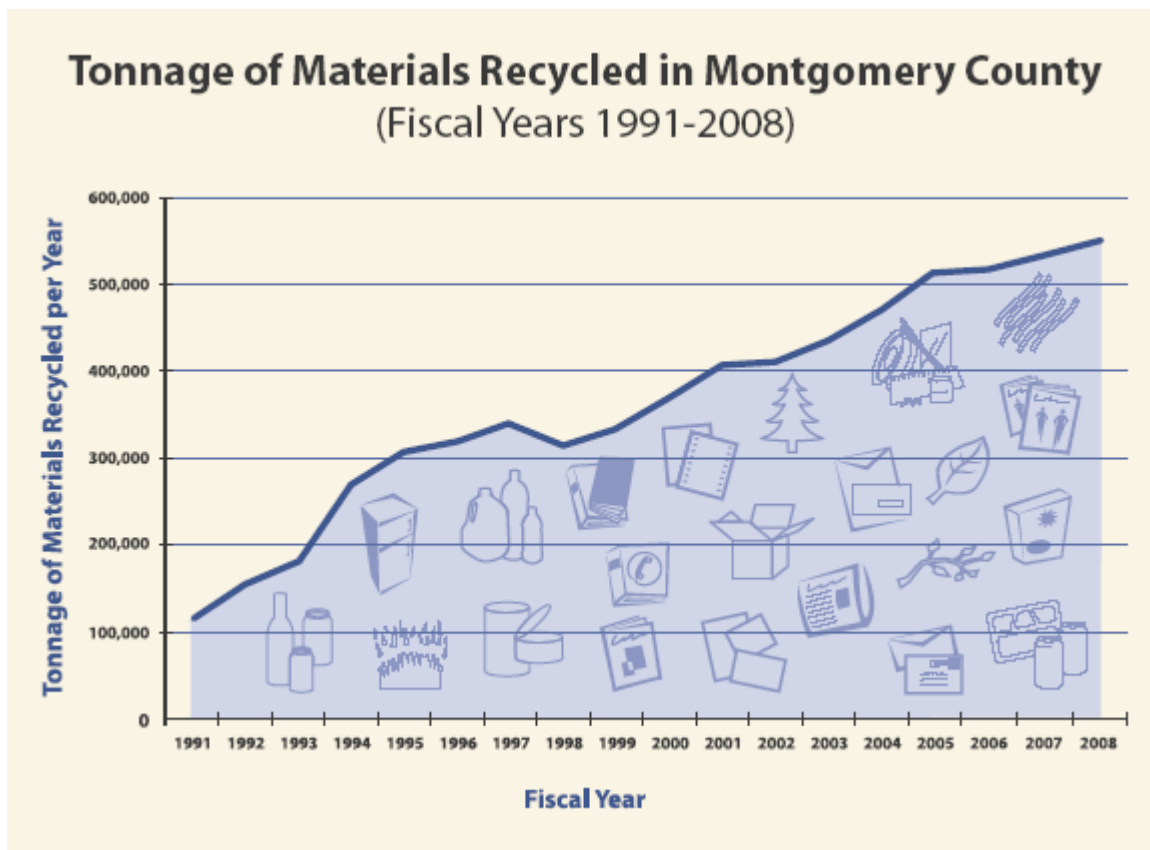
Current Conditions and Constraints: The County provides education and technical assistance to all types of waste generators emphasizing the economic benefits of waste reduction and increased recycling for lowering waste disposal costs.

Needs Assessment and Plan Direction: Refuse Tipping Fee avoidance provides an economic incentive for waste generators who pay a contractor for waste removal and disposal. In addition, the system benefit charge financing method described in Chapter 5 provides financial incentives for the non-residential sector to reduce waste generation whereby property owners who document a lower than average waste generation rate for their land use type can be assessed a reduced base system benefit charge. Independent of the benefits of simply shifting waste from disposal to recycling, the County's COOP (See Section 4.1.2.3) should continue to emphasize these fiscal incentives for waste reduction. .

4.1.2 Recycling Achievement, Opportunity and Direction

Figure 4-1, below shows the historical achievement in the total tonnage of MSW recycled in Montgomery County since the inception of its recycling programs in 1992.

Figure 4-1



During Fiscal Year 2008, over 553,000 tons of municipal solid waste generated within Montgomery County, were recycled.

As is also suggested by the image above, MSW is comprised of many different types of materials. In fact, it is comprised of virtually every “thing” in our everyday culture. Markets determine if a particular type of material is recyclable. Thus, not all types of

waste are recyclable, and the opportunities for increased recycling lay in the quantities of those materials that are recyclable, but are still being disposed.

Table 4-1 enables one to take stock of those opportunities, material type by material type, and both in terms of tonnage potential, and in terms of individual capture rates. The table was constructed by applying the results of the County's most recent waste composition analysis to the known disposal tonnages. It is important to note that while those disposal tonnages were based on certified truck scales (see Appendix B), the *composition* of the disposed MSW was determined on the basis of statistical sampling of disposed MSW. Thus, while a sound methodology, inferences based on Table 4-1 must be regarded as estimates. Notwithstanding that limitation, meaningful suggestions arise. Some of these inferences are in the form of "capture rates". A capture rate can be regarded as a recycling rate individualized with respect to a specific type of material, or grouping of material types. Table 4-1 reveals the locus of increased recycling tonnage opportunities and at the same time appears to validate the feasibility of the County's overall 50 percent recycling goal.

For example, Table 4-1 indicates that of all the waste glass bottles and jars generated in the single-family sector, 70.9 percent, or 14,386 tons, were captured for recycling, leaving 29.1 percent, or 5,344 tons of glass disposed. That disposed tonnage represents the estimated *opportunity* for additional recycling offered by glass bottles and jars in the single-family sector.

Taking another example, the table indicates that only 46.2 percent of the non-residential paper was captured during FY08, leaving 53.8 percent, or 108,662 tons of paper, disposed from that sector.

By comparison, it can be seen that a shift of 71,186 tons of any material from disposal to recycling, for the FY08 period, would have resulted in the County having achieved its overall 50 percent recycling goal that year.

Table 4.1
Waste Recycling by Material type: Achieve and Opportunity

Basis for composition of disposed waste is the interpolated estimate of FY05 & FY09 waste sorts.		FY08 Actuals									Opportunity: Recyclable but Disposed			Total Disposed (Tons)
		Single-Family			Multi-Family			Non-Residential			Disposed by Sector (tons)			
		Generated (tons)	Captured (tons)	Capture Rate %	Generated (tons)	Captured (tons)	Capture Rate %	Generated (tons)	Captured (tons)	Capture Rate %	Single-Family	Multi-Family	Non-Residential	
Banned ER 15-04	Subtotal, Banned Components	323,838	259,525	80.1%	36,746	10,622	28.9%	381,860	232,700	60.9%	64,314	26,124	149,159	239,597
	Paper	109,501	67,467	61.6%	18,661	1,850	9.9%	202,086	93,424	46.2%	42,034	16,811	108,662	167,507
	Glass	19,730	14,386	72.9%	3,407	622	18.2%	10,547	2,864	27.2%	5,344	2,786	7,683	15,813
	Other Ferrous	15,488	11,419	73.7%	3,364	1,616	48.1%	98,896	87,203	88.2%	4,069	1,747	11,693	17,510
	Yardwaste	165,492	160,220	96.8%	7,014	5,901	84.1%	52,458	43,960	83.8%	5,272	1,113	8,498	14,883
	Narrow-Neck Plastics	7,305	3,667	50.2%	2,149	160	7.4%	7,410	711	9.6%	3,638	1,989	6,699	12,327
	Ferrous/Bimetal Containers	3,167	1,599	50.5%	1,100	352	32.0%	2,786	314	11.3%	1,568	748	2,472	4,788
	Aluminum Beverage Cans	1,509	691	45.8%	517	28	5.5%	2,051	371	18.1%	818	488	1,681	2,987
	Other Aluminum (foil)	764	18	2.3%	259	1	0.2%	1,126	1	0.1%	746	258	1,125	2,129
	Other Non-Ferrous Metal	882	58	6.6%	276	92	33.4%	4,499	3,854	85.7%	824	184	646	1,653
Encouraged														
	Textiles & Leather (no Rugs)	5,673	120	2.1%	1,730	6	0.4%	6,605	158	2.4%	5,553	1,724	6,447	13,724
	Wood Waste (including pallets)	7,581	6,367	84.0%	1,160	66	5.7%	40,271	20,491	50.9%	1,214	1,094	19,781	22,090
	Whole Tires (as Rubber)	2,179	2,101	96.4%	628	528	84.0%	4,379	2,628	60.0%	78	101	1,752	1,930
	Lubricants (e.g. motor oil)	4,127	3,993	96.7%	1,127	1,079	95.8%	2,889	2,679	92.7%	135	47	210	392
	Electronics	4,911	1,033	21.0%	2,143	35	1.6%	4,216	354	8.4%	3,878	2,108	3,861	9,847
	Batteries	270	262	97.2%	124	9	7.1%	1,670	1,455	87.1%	8	115	215	338
Tire Steel	485	213	43.9%	132	53	40.4%	814	266	32.7%	272	79	547	898	
Potential														
	Food Waste	44,636	15	0.0%	13,304	0	0.0%	72,293	5,043	7.0%	44,621	13,304	67,249	125,174
	Film Plastic	16,051	-	0.0%	4,680	-	0.0%	26,843	474	1.8%	16,051	4,680	26,369	47,100
	Other Plastic	7,319	213	2.9%	2,905	2	0.1%	14,322	1,011	7.1%	7,106	2,903	13,311	23,319
	Carpets / Rugs	3,685	-	0.0%	1,717	-	0.0%	13,259	-	0.0%	3,685	1,717	13,259	18,661
No Markets														
	Other Wood	4,022	-	0.0%	1,895	-	0.0%	11,758	-	0.0%	-	-	-	17,675
	Other Glass	609	-	0.0%	294	-	0.0%	739	-	0.0%	-	-	-	1,642
	Disposable Diapers	11,346	-	0.0%	3,496	-	0.0%	3,332	-	0.0%	-	-	-	18,174
	Other Waste	53,815	-	0.0%	18,118	-	0.0%	83,380	-	0.0%	-	-	-	155,312
TOTAL		490,547	273,841	55.8%	90,199	12,401	13.7%	668,630	267,260	40.0%	146,914	53,996	302,160	695,874

Notes:

Banned ER 15-04: These materials are required to be recycled under Executive Regulation 15-04, and are banned from disposal in waste from all sectors.

Encouraged: Although not subject to a disposal ban, these materials are recycled via standing programs. Consistent if not strong markets exist for these materials. Textiles are recycled only via voluntary drop-offs (does not include clothing donations).

Potential: Markets either exist for these materials, or could exist with additional processing. e.g. As of 7/1/08, additional rigid plastics, not just narrow-necked bottles, were deemed reliably marketable and added to the County's recycling program.

No Markets: No existing or anticipated markets for these materials.

Using Table 4-1 to examine just that group of recyclable materials that have been banned from disposal (by Executive Regulations ER15-04AM and ER18-04), it can be shown that those banned materials are already being recycled at an aggregate rate of 63.2 percent. Another inference that can be taken from Table 4-1 is that in order to have achieved an overall system-wide 50 percent recycling rate in FY08 *just on the basis of increased recycling of banned materials alone*, the aggregate capture rate for those banned materials would need to have been increased to 77.3 percent. The County judges, therefore, that achieving its overall 50 percent recycling goal is achievable, but ambitious.

Goals should be ambitious. An important planning question is how and when this goal can be achieved. As reviewed in Chapter 3, and detailed above and in Appendix B, the County's recycling rate for Fiscal Year 2008 was over 44.3 percent.

The tonnage projections provided in Chapter 3 (See Table 3-10) envision the County reaching 48.3 percent recycling in FY14, and then leveling off at that level. In this regard, it should be understood that Montgomery County's system of finance, requiring a nexus between its system of solid waste charges and tonnages, dictates that published County solid waste tonnage projections be consistent with those of its approved Fiscal Plans. Annually, within its budget process, the County updates the solid waste tonnage projections underlying its proposed Fiscal Plan, and that Fiscal Plan, which encompasses an eight year span, is proposed each March 15. As a matter of prudent fiscal policy and process, the County's tonnage projections published in any year, may not presume any future-year approvals of new, as yet un-appropriated programs or initiatives, other than those proposed for the subject Budget Year. Thus, the tonnage projections presented in Chapter 3 of this plan are consistent with the County's Fiscal Plan for Solid Waste Management published March 15, 2009.

Yet, achieving or exceeding a 50 percent overall recycling rate by the end of Calendar Year 2010 remains the County's goal. The challenges toward meeting that goal

are multiple—to annually advance recycling achievement within the fiscal constraints of approved programs, to track achievement, continually identify new opportunities to enhance recycling achievement, and ultimately achieve the goal.

Needs Assessment and Plan Direction: To do this, the County maintains an ongoing recycling planning and implementation process. Formally punctuating that process, the County annually publishes its “Recycling Plan Update”. That Plan reports on specific program achievements, lays out how the 50 percent goal is being pursued under approved programs, and identifies potential additional initiatives that can be introduced in a subsequent budget year, if needed, to meet the 50 percent goal. The Recycling Plan Update can be obtained by contacting DEP. The County will continue to update that plan annually, and will introduce additional programs and initiatives if needed.

It is important to note that this Comprehensive Solid Waste Management Plan, need not be amended in order for the County to amend, from time to time (as it does annually as part of its fiscal process) its tonnage projections, its recycling projections, or its Recycling Plan Update. Montgomery County has already surpassed all State recycling requirements, and as will be discussed in subsequent sections of this Plan, the County provides a disposal system that is more than adequate to dispose of all non-recycled or non-recyclable MSW even if the recycling rate does not increase as projected in this Plan.

4.1.2.1 Single-Family Residential Sector Recycling

Current Conditions and Constraints: As mandated by Executive Regulation 15-04AM, the County provides curbside collection of recyclable materials to over 209,000 single-family residences in unincorporated areas of the County. Residents of 36,000 single-family households located in incorporated municipalities receive municipally arranged recycling service.

Separated materials recycled through the County's curbside collection program include glass, plastic, aluminum and ferrous containers and newspaper. In 1994, the County added collection of yard trim (grass, leaves and brush) to the curbside service. In 1996, the County added household scrap metal items (swing sets, iron railings, large appliances, disassembled metal sheds, etc.) to the curbside recycling program. In 2000, the County added mixed paper (junk mail, catalogs, paperback books, magazines, cardboard boxes, newspaper, office paper and telephone books) to the curbside recycling program. The County also provides leaf vacuuming services in the Leaf Collection District described in Section 3.2.4 of this Plan.

To support the recycling collection program, the County operates a MRF in Derwood, Maryland. This facility provides for segregation of commingled containers and also serves as a transfer station for transport of mixed paper. The County also operates a leaf and grass composting facility in Dickerson, Maryland.

Field surveys have indicated that participation in the curbside recycling program has exceeded 80 percent of eligible households. Table 4-1 shows that in Fiscal Year 2008, single-family homes in the County set out 31,780 tons of commingled recyclable containers and 67,467 tons of tons of mixed paper.

In Fiscal Year 2008, the single-family residential sector accounted for 39.3 percent of the total County municipal solid waste generation (MSW) and recycled 55.8 percent of the MSW it generated.

In addition to a strong public education and outreach program, a key to this success is that the County uses large (65 gallon), heavy duty, wheeled, and lidded carts for collecting residential mixed paper (RMP) from single-family homes. Where these carts are found to be too large to be easily stored (e.g. at many townhouses) the County offers more moderately sized carts. In all cases, virtually all forms of unsoiled paper are accepted. In fact, the County has banned disposal of recyclables mixed in with

disposable trash, any form of paper that could otherwise be recycled if not soiled (see Executive Regulations 15-04AM and 18-04).

Needs Assessment and Plan Direction: While a large percent of residents participate in the curbside recycling program, waste composition studies conducted at the Transfer Station reveal significant quantities of recyclable materials discarded as refuse. Greater capture of existing materials may add several percentage points to the single-family residential recycling rate.

The County has developed a single-family residential recycling system that relies on source separation of recyclable paper, containers, yard trim and scrap metal at the curb in front of each resident's home. Source separation allows for more efficient re-use and marketing of recyclables. Given the County's investment in a curbside collection system and the MRF, the County does not envision a need to develop additional recycling drop-off centers (see Section 4.1.2.4). However, outreach, education and enforcement are continuing important needs in the single-family sector. Also, while the recycling effectiveness of county-wide distribution of large lidded wheeled carts has been proven, residents, in particular town houses, continue to request carts of varying sizes. DEP will attempt to accommodate cart size variation requests that it believes will foster increased recycling and monitor results.

With respect to those recyclable materials that have been banned from disposal, as a group, Table 4-1, indicates a single-family recycling capture rate of over 80 percent. Even discounting the most highly recycled component, yard waste, the single family sector is capturing 62.7 percent of those materials that are banned from disposal.

A recent survey of homes receiving county collection services indicated that residents *believe* that they participate a high rate of compliance with the County's recycling program. The same survey indicated a lack of awareness and use of the County's curbside scrap metal collection service. In deed, relative to the multi-family and

non-residential sectors, Table 4-1 indicates higher single-family recycling capture rates and thus higher over all compliance with recycling rules within the single-family sector. However, as also indicated in Table 4-1, there remained over 64,000 tons of recyclable materials, banned from disposal, disposed of by single-family residences, including 42,000 tons of residential paper. This indicates that recycling outreach, education and enforcement are continuing needs in the single-family sector.

4.1.2.2 Multi-Family Residential Sector Recycling

Current Conditions and Constraints: Executive Regulation 15-04AM mandates recycling of aluminum, bi-metal, steel, glass and plastic containers, mixed paper, scrap metal, Christmas trees and yard trim at all apartment and condominium properties. While property owners and managers administer the collection of recyclables for multi-family residences, the County provides technical assistance, education, and training regarding on-site collection alternatives and management of collection contracts. Education and training is also provided directly to residents.

The County enforces multi-family recycling regulations through mandatory reporting requirements and a combination of site investigations, on-site verification of exemptions, and fines.

In Fiscal Year 2008, the multi-family residential sector accounted for 7.2 percent of the total County waste generation. Multi-family residents recycled 12,401 tons or 13.7 percent of the waste generated in the sector. Waste composition studies conducted at the Transfer Station reveal significant quantities of recyclable materials from multi-family residences discarded as refuse.

Needs Assessment and Plan Direction: Advancements are necessary to maximize recycling in the multi-family sector. Opportunities exist to increase recycling by the multi-family residential sector. The primary strategy for increasing multi-family residential recycling is to conduct on-site training and provide guidance to promote full

compliance with County regulations and enforcement actions. In addition, DEP is studying the current costs of recycling and waste disposal collection experienced by multi-family properties and is assessing the feasibility of collection scenarios which would successfully decrease the realized and internalized costs of recycling, thus creating economic incentives to recycle, and to recycle more. DEP consistently evaluates market conditions in the region, and recommends recycling of other materials for which markets are available and favorable, relative to disposal.

4.1.2.3 Non-Residential Sector Recycling

Current Conditions and Constraints: Executive Regulation 15-04AM, enacted in 2005, mandates recycling of glass, plastic, aluminum and ferrous containers, mixed paper, scrap metal, Christmas trees and yard trim by more than 35,000 organizations in the non-residential sector. While commercial, industrial and institutional property owners and managers administer the collection of recyclables for their sites, the County provides technical assistance and training regarding on-site collection alternatives and management of collection contracts. Education and training is provided to business owners, managers, and employees.

The County enforces non-residential recycling regulations through mandatory reporting requirements and a combination of site investigations, on-site verification and fines.

In Fiscal Year 2008, the non-residential sector accounted for 53.5 percent of the total County solid waste generation and recycled 267,260 tons or 40 percent of the solid waste generated in the sector. Waste composition studies conducted at the Transfer Station reveal significant quantities of recyclable materials from the non-residential sector discarded as refuse.

Needs Assessment and Plan Direction: Advancements are necessary to maximize recycling in the non-residential sector. While most large and mid-sized

employers in the County have implemented recycling programs, many small businesses lack the resources, training, and experience to readily incorporate on-site recycling.

Referring again to Table 4-1, substantial opportunities exist to increase recycling in the non-residential sector. The primary strategy for increasing non-residential recycling is to conduct on-site training and provide guidance to promote full compliance with County regulations and enforcement actions. In addition, DEP has studied the costs of recycling and waste disposal collection experienced by businesses and organizations and has demonstrated repeatedly via its COOP program (discussed next) the feasibility of collection scenarios which successfully decrease the realized and internalized costs of recycling, thus creating economic incentives to recycle, and to recycle more. DEP also consistently evaluates market conditions in the region, and recommends recycling of other materials for which markets are available and favorable, relative to disposal. The County Executive's Recycling Task Force plays a large role as an advocate for effective and efficient County recycling initiatives. The business community will continue to be consulted as needed.

Cooperative Collection Methods: Small-scale business owners especially have expressed concerns over the years, such as the cost and availability of recycling and refuse collection services due to the relatively small amount of materials that they generate. Businesses in more densely developed Central Business Districts (CBDs) regularly face space constraints when it comes to placement of recycling and refuse collection containers outside of their establishments. It also became apparent that small businesses face an often disproportionate administrative burden when securing and contracting collection services on their own.

As a result of these concerns, DSWS has been conducting cooperative recycling and refuse collection study projects for small businesses in the Silver Spring, Bethesda and Wheaton CBD's. DSWS support included: on-site waste analysis of each

business' waste stream, determining the amount of recyclable material generated, practical advice for securing collection services, education, training and follow up.

Based upon the data collected, the implementation of these cooperative recycling and refuse collection projects has saved money for every participating businesses on their monthly refuse and recycling collection costs as well as reducing their required administrative efforts in terms of contracting for recycling and refuse collection services. Furthermore, the participating businesses have been achieving a recycling rate exceeding the County's 50 percent recycling goal. DEP will continue evaluating this and other opportunities to increase recycling by businesses.

4.1.2.4 Drop-Off Programs

Current Conditions and Constraints: Collection constraints or market conditions limit the feasibility and cost effectiveness of regular collection of certain recyclables at their point of generation. The County provides receptacles at the Shady Grove Processing Facility and Transfer Station (and select other sites) for generators to unload self-hauled recyclables. The County offers drop-off services for: yard trim, mixed paper, bottles and cans, textiles, tires, used motor oil, antifreeze, automobile batteries, building materials, computers, and white goods/scrap metal (large home appliances). Chlorofluorocarbon (CFC) refrigerants and polychlorinated biphenyl (PCB) containing capacitors are removed from white goods in accordance with Federal and State regulations.

Needs Assessment and Plan Direction: The County will continue to provide drop-off services for certain recyclable materials. The County may modify the drop-off services as needed to reflect changes in the collection program or market conditions. DEP will continue to monitor the needs and opportunities including the need for more electronics recycling and evaluate whether there is a need to continue satellite electronics recycling events.

4.1.2.5 Electronic Recycling Program

Current Conditions and Constraints: DSWS' electronics recycling program is consistent with the provisions of the Statewide Electronics Recycling Program Act ("Act"), which took effect on October 1, 2007. The program provides for the recycling of computers, which includes desktop personal computers, laptop computers and computer monitors, and is consistent with the Act. Additionally, and again consistent with Act, the program also provides for the recycling of covered electronic devices, which means a computer or video display device with a screen that is greater than 4 inches measured diagonally. Other electronics items are acceptable for recycling under the program.

The computer recycling program started in 2000, and this was expanded to include televisions in October, 2007. In April, 2008, this program was again expanded to include cell phones, PDAs, digital cameras, and CD players, to list some of the items. Currently, this program recycles about 55 tons of computers and 100 tons of televisions and other electronics per month. County residents and businesses may drop-off unwanted electronics at a dedicated drop-off site, which has an enclosure and a canopy, seven-days-a-week on the county's Transfer Station's campus. Additionally, DSWS began a satellite event electronics recycling program in June 2008, using Park & Ride lots and schools as event sites for residents and businesses who are at a distance from the Transfer Station. These satellite events will continue for the foreseeable future and have occurred approximately on a monthly basis. Currently, E-Structors, located in Elkridge MD, receives material collected via the County's electronics recycling programs. The contract with E-Structors requires them to recycle all material except residue (non-electronic material).

Needs Assessment and Plan Direction: The County will continue to provide drop-off services for certain recyclable materials. The County may modify the

drop-off services as needed to reflect changes in the collection program or market conditions.

4.1.2.6 Private Sector Recycling Infrastructure

Current Conditions and Constraints: Large quantities of recyclables, particularly from the non-residential and multi-family residential sectors, are exported from the County for processing and marketing. For many years, land use standards were obstacles to a recycling infrastructure in the County. In 1997, the County Council approved an amendment to the County Zoning Ordinance that provides for the location of a "recycling facility" as a permitted use in select industrial zones.

Needs Assessment and Plan Direction: While out-of-County processing of recyclables is not itself a problem, the lack of nearby recycling acceptance facilities raises the cost and limits the feasibility of additional private sector recycling. While current recycling facility capacity is adequate, future needs will be projected and facilitated when appropriate.

4.1.3 County Provided Disposal System

While the County strives to achieve its overall 50 percent recycling goal, the County's overall solid waste management system needs to be sufficiently robust to assure proper management of all MSW generated in the County. For proper disposal of waste that is either not recycled or not recyclable, Montgomery County employs both Resource Recovery and Landfilling. Consistent with its sustainability objectives, Resource Recovery is preferred over landfilling, but the combination of both is provided to assure a complete system.

4.1.3.1 County Resource Recovery Facility

Current Conditions and Constraints: In August 1995, the County began operation of a mass-burn RRF in Dickerson, Maryland. Waste that is delivered to the County's Shady Grove Processing Facility and Transfer Station and considered processible at the RRF is transported by rail to the RRF for "waste-to-energy" processing and ferrous metals recovery. Processing at the RRF recovers heat generated from the controlled combustion of MSW to produce steam which drives a turbine to generate electricity which is competitively marketed to the grid. In addition to renewable energy recovery, ferrous metals are recovered from RRF residue and competitively sold into the scrap metal market. The permitted calendar year throughput capacity of the RRF facility is 657,000 tons per year (indexed to waste with a higher heating value of 5,500 BTU per pound).

Needs Assessment and Plan Direction: The County will regularly monitor and evaluate all aspects of RRF operations to ensure that waste transport and processing is conducted in a cost efficient and environmentally sound manner.

4.1.3.2 County-Provided Landfilling

Current Conditions and Constraints: For disposal of RRF residue, bypass and non-processible waste, the County has secured a long term out-of-County hauling and disposal agreement with Brunswick Waste Management Facility, Inc. (BWMF). Under the agreement, the contractor must accept at the Transfer Station, RRF, or other county delivery site, handle transport and dispose of all waste delivered by or on behalf of the County in accordance with applicable law. The contractor must provide all equipment necessary and there is no upper limit on the tonnage that must be accepted and disposed by the contractor. The initial term of the County's agreement extends through 2012 and includes an option, exercisable at the County's sole discretion, to extend the term through 2017. The same contract also provides for back-up landfill capacity in Georgia, or other approved locations, should the Brunswick County facility become unavailable. This is discussed further in the next chapter (Section 5.2.1.5.). With

respect to the FY2019 planning horizon, there will be a need to secure an additional two years of capacity.

The County has also purchased property off Wasche Road in the Dickerson area (known as “Site 2”) for use as a future landfill site if needed, and has obtained a waste disposal permit for a landfill on this site.

Needs Assessment and Plan Direction: The County intends to retain the Site 2 property through the ten-year planning period and beyond for use in the event economic conditions or changes in law render out-of-County waste disposal infeasible. If the need arose to use the Site 2 landfill, it would provide at least ten years of disposal capacity.

4.1.4 Regional Non-County MSW Disposal Facilities

Private sector collectors in Montgomery County have many options other than the County’s Transfer Station to take their MSW.

Current Conditions and Constraints: Figure 4-2 shows the locations of disposal facilities accepting out-of-jurisdiction MSW, and corresponding Table 4-2 shows their road-distances from the center of Montgomery County.

During FY08, private sector collectors chose to dispose of 168,618 tons of MSW at out-of-County facilities. The most popular of these, with respect to Montgomery County collectors, were the Annapolis Junction, and the District of Columbia transfer stations. Capacities of these facilities are not fully utilized. The Annapolis Junction facility is permitted for 3,000 TPD, but typically handles only about 2,000 TPD. The District of Columbia transfer stations have recently been expanded.

In the District of Columbia, there are four transfer stations where private haulers who serve Montgomery County take their waste. Two of these--Fort Totten and Benning Road—are owned by the District of Columbia government and the other two are private. Both of those two DC government facilities just recently have been renovated. Their combined annual throughput capacity is 1,000,000 TPY, and of that one million TPY capacity, DC government reports a total throughput of only 520,400 tons.¹ During FY08, about 57 percent of the private sector MSW export from Montgomery County went to the Annapolis Junction facility, and about 22 percent went to facilities located in the District of Columbia.

As a practical matter, private sector collectors have, and are expected to continue, to utilize regional options for disposal, and recognizing this is important to the proper management of our integrated solid waste management system.

¹ Personal communication with Jeffery Dickerson, District of Columbia, 11/10/08.

Figure 4.2

County Facilities Accepting Out-of-Jurisdiction MSW

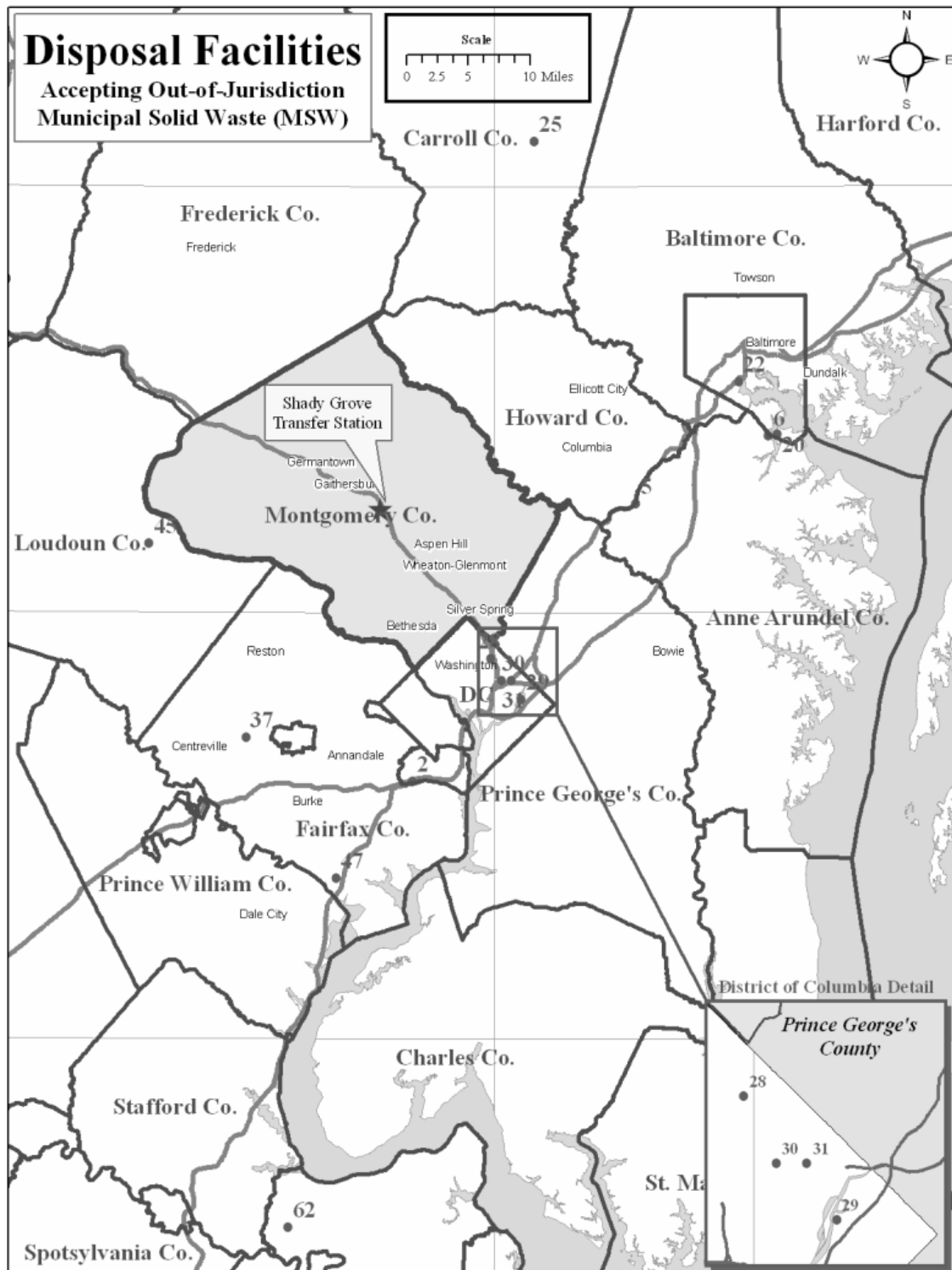


Table 4.2
Disposal Facilities Accepting Out-of-Jurisdiction
Municipal Solid Waste (MSW)

FAC_ID	Facility	County	State	Road Distance
2	Alexandria WTE	Alexandria	VA	31
5	Annapolis Junction PF & TS	Anne Arundel	MD	25
6	Curtis Creek PF & TS	Anne Arundel	MD	39
20	Baltimore Procesing Facility and Transfer Center	Baltimore City	MD	40
22	Southwest Resource Recovery (formerly BRESKO)	Baltimore City	MD	37
25	Northern Landfill PF&TS	Carroll	MD	45
28	Fort Totten Trash Transfer Station	District of Columbia	DC	22
29	Benning Road TS	District of Columbia	DC	32
30	Consolidated IPC (a.k.a) Federal IPC	District of Columbia	DC	24
31	Waste Management of MD, Inc (Northeast TS)	District of Columbia	DC	32
37	Fairfax County TS - a.k.a I-66	Fairfax	VA	28
45	Old Dominion Transfer Sstation	Leesburg	VA	37
47	Fairfax County WTE	Lorton	VA	36
62	King George County Landfill	King Georges	VA	75

Table 4.3
Private Sector MSW Export

Facility Name	Location	FY08 Tons	Percent
Annapolis Junction	Jessup, MD	91,787	57.2%
Fort Totten (DC Government)	NE, Washington DC	27,762	17.3%
Waste Management	Queens Chapel, Rd, NE	25,429	15.8%
Federal IPC	NE, Washington DC	8,253	5.1%
Sixteen Other Locations	Various	5,559	3.5%
Alexandria WTE	Alexandria, VA	1,766	1.1%
		160,556	100%

4.1.5 Municipal Solid Waste Composting

Current Conditions and Constraints: With the exception of yard trim composting, no measurable portion of the County's MSW stream is processed through composting.

Mixed MSW composting is a developing technology that has not been included as a component of the County's solid waste management system. Moreover, no private facilities currently exist in the region to compost mixed MSW, and based on the commercial the status of the technologies, none is expected in the near future.

As a categorical component of MSW, food waste represents an estimated 125,174 tons of disposed waste according to Table 4-1, and thus a theoretical opportunity for increased recycling. Limited private sector efforts have been made in the region to separately collect select sources food wastes for composting, but with uncertain results and uncertain outlook.

Needs Assessment and Plan Direction: The solid waste management system developed by the County has been designed to achieve all State and County goals and requirements without reliance on large scale mixed MSW composting. This County does not envision a need to engage in mixed MSW composting during the next ten years. However, developments in composting of separately-collected food waste should be tracked and opportunities examined as potentially contributing to increased recycling within the planning horizon.

4.1.6 Solid Waste with Hazardous Characteristics

Current Conditions and Constraints: Some common household and business waste materials in MSW may have hazardous characteristics (toxicity, ignitability, corrosivity, or reactivity). Waste materials with hazardous characteristics that may be found in homes and small businesses include: pesticides, oil-based paints, paint thinners

and solvents, batteries², fuels, used motor oil, brake fluid, antifreeze, photographic chemicals and compact fluorescent light bulbs (CFLs).

Household hazardous waste (HHW) is not required to be handled separately as hazardous waste under state and federal law if certain conditions are met. However, DEP programs have been implemented to promote the source separation of these materials from MSW, along with a program for handling waste from businesses that qualify under USEPA rules as small quantity generators.

In July 2004, the HHW program began operation of a permanently staffed site at the Shady Grove Processing Facility and Transfer Station. In August of 2006, the HHW program expanded its operations from approximately four days per week to seven days a week. In addition, the HHW program also includes four satellite collection events each year. Approximately 60,000 households participate in the HHW collection program each year. Since its inception, the HHW program has processed tons of toxic, flammable, corrosive and reactive materials.

In 1996, the County launched the ECOWISE program to receive materials from businesses that generate small quantities of such wastes. Businesses served by this program are known as "small quantity generators." Montgomery County is the only jurisdiction in the State of Maryland to provide this service to businesses.

DEP currently accepts CFLs as part of its Household Hazardous Waste program. Since CFLs and fluorescent tubes are Universal Wastes, not hazardous wastes, the County's HHW contractor accepts them from businesses at any time for a small fee, and they do not need to wait for the once-a-month ECOWISE program which serves small quantity generators.

² The battery types that require special disposal are: rechargeable nickel-cadmium (Ni-Cd) and nickel metal hydride (NiMH) batteries, small sealed and automotive lead acid batteries, and lithium, mercuric oxide, silver oxide batteries.

Also, for electronics recycling, see discussion in Section 4.1.2.4., above.

Needs Assessment and Plan Direction: DEP will pursue additional opportunities to expand participation in both the HHW and small quantity generator programs in a cost effective manner. There is growing use of and interest in CFLs. Some private retailers such as Home Depot and IKEA stores have begun to offer CFL recycling opportunities at their stores. These retailers contract CFL collection services with their current hazardous waste collection company or through designated CFL recycling collection companies and programs. DEP will encourage this practice, and also will investigate the feasibility of County-sponsored satellite collection centers for CFLs and fluorescent tubes.

4.2 MANAGEMENT NEEDS: SPECIAL WASTE STREAMS

4.2.1 Land Clearing and Demolition Debris Needs

Traditionally the bulk of rubble and land clearing debris was handled almost exclusively by the private sector, with the County handling only about 40,000 TPY of materials generated by its own road operations.

Current Conditions and Constraints: As reported in Chapter 3, during FY08, the County received at its transfer station 110,600 tons (or 46 percent of the total C&D generated), and private facilities received about 128,660 tons (or 54 percent of the C&D total generated). Table 4-4, below, presents more specifically, the generation and disposition of the 239,260 tons of C&D generated in the County during FY08.

In addition to the County's Transfer Station, there is one facility located within the borders of the County, Clarksburg, Maryland, which is permitted to accept and process C&D for recycling. The Clarksburg facility opened in 2005, and is permitted to receive up to 250,000 TPY of C&D. During FY08, however, that facility accepted only 32,963 tons. Most of this was delivered by collectors affiliated with the owner. This is apparent underutilization of capacity is at least partly attributable to the fact that not all types of C&D can be processed at the facility due to limitations on the separations that can be achieved

there relative to the conditions of the mix collected and potentially delivered. There may also be private and economic circumstances. The facility appears to maintain its tipping fee slightly higher than the County's. Less than 40 percent of the incoming material at the Clarksburg facility is recycled—the balance being disposed in rubble fills located outside the County.

Table 4.4
C&D Generation and Disposal

Total C&D Generation, FY08	Tons 239,260	100%	Tons Breakouts	
Received by Montgomery County	110,600	46%		
Recycled by County (does not count toward Recycling Rate)			5,057	2.1%
Disposed by County via its Out-of-County (OOC) Landfill Contract			75,424	31.5%
Burned by County in RRF (remaining ash also disposed in OOC Landfill)			30,119	12.6%
Handled Entirely by the Private Sector	128,660	54%		
Clarksburg C&D (< 40% gets recycled. Permitted for 250,000 TPY)			32,963	13.8%
39 Other Private Facilities (59,000 tons went to just 12 other facilities)			95,697	40.0%

As noted in Table 4-5, there are another 39 outside the County that accepted C&D, with just 12 of them accepting 95,697 tons in FY08 and accounting for the disposition of 40 percent of total C&D generated. Table 4-5 details the FY08 disposition of that 128,660 tons of C&D that was handled entirely by the private sector during FY08 (e.g. not delivered to the County).

Recently, the County modified its out-of-County hauling and disposal contract to enable select recyclable C&D received by the County at its transfer station to be transported for recycling at the Honeygo Run facility located northeast of Baltimore (facility identification number 13 in Figure 4.3 and Table 4.6). This modification provides for the recycling of mixed dirt, rocks, brick, concrete and rebar and is a promising avenue for recycling mixed loads this type of material received by the County.

Some of the facilities noted above accepted quite small quantities of C&D, in particular those located farther away. Figure 4-3, below, maps most of these facilities,

and accompanying Table 4-5 shows road-distances from the center of Montgomery County.

Table 4.5
FY08 C&D Private Sector Export from Montgomery County by Destination

Facility Name	Facility Location	State	Tons
Ritchie Land Rubble LF	2001 Ritchie Marlboro Rd, Upper Marlboro, MD 20772	MD	40,374.91
C & D Recovery PF	24120 Frederick Rd, Clarksburg, MD 20872	MD	32,962.53
Eyler Rubblefill	Libertytown	MD	16,500.00
Ameriawaste PF & TS	7150 Kit Kat Rd, Elkridge, MD 21075	MD	7,232.51
Federal IPC	1220 W St, NE, Washington, DC 20018	DC	5,822.59
Merrifield	2801 Dorr Ave, Fairfax, VA 22031	VA	4,386.87
TRC	14852 Old Gunpowder Rd, Laurel, MD 20707	MD	3,484.00
ADS	5900 Sherriff Rd, Capitol Heights, MD 20743	MD	2,972.80
Annapolis Junction	8077 Brock Bridge Rd, Jessup, MD 20794	MD	2,211.58
Potomac Landfill	3730 Greentree La, Dumfries, MD 22026	MD	1,990.00
Brandywine Sand & Gravel	Captiol Heights, MD 20743	MD	1,963.00
Reliable Recycling Center	502 East St, Frederick, MD 21701	MD	1,440.25
Percontee	Silver Spring, MD 20904	MD	1,352.95
Hilltop C & D	7950 Telegraph Rd, Alexandria, VA 22315	VA	851.00
Machado	Baltimore	MD	834.50
PMI	6931 B&A Blvd, Baltimore, MD 21201	MD	802.50
Lorton Landfill	10001 Furnace Rd, Lorton, VA 22079	VA	567.00
C & D Recovery II	Manassas	VA	273.30
Calvert Trash Systems	1601 Skinners Turn Rd, Owings, MD 20736	MD	265.00
EAR of MD	Baltimore	MD	244.77
Recovermat	2202 Halethorpe Farm Rd, Halethorpe, MD 21227	MD	233.50
Curtis Creek	Baltimore, MD 21226	MD	214.75
Days Cove	6415 Days Cove Rd, White Marsh, MD 21162	MD	214.75
Honey Co	10701 Philadelphia Rd, Perry Hall, MD 21128	MD	214.75
L & W	8308 Lokus Rd, Odenton, MD 21113	MD	192.00
Asphalt Roof Recycling Center	1005 Rising Ridge, Mt. Airy, MD 21771	MD	158.00
Roll-Off Express	Finksburg, MD 21048	MD	142.00
Rodgers Brothers	2225 Lawrence Ave, NE, Washington, DC 20018	DC	136.98
East End Landfill	Richmond	VA	128.00
BRESCO	Baltimore, MD 21230	MD	83.10
Reico	1801 Annapolis Rd, Baltimore, MD 21230	MD	73.50
Land Venture II	Centerville, VA 20120	VA	64.00
Belle Grove	Baltimore, MD 21225	MD	60.00
DC Materials, Inc.	3334 Kenilworth Ave, Hyattsville, MD 20781	MD	60.00
Old Fort Farms	10001 Sunset Vw, Ft. Washington, MD 20744	MD	52.00
Westport Reclamation	Baltimore	MD	32.00
Waste Mgmt.	2160 Queens Chapel Rd, NE, Washington, DC 20018	DC	29.35
Benning Rd Transfer Station	3400 Benning Rd, Washington, DC 20019	DC	21.00
Barnabas Pitt	4714 Chilton Rd, Temple Hills, MD 20748	MD	10.00
Patuxent Materials	Baltimore	MD	8.00
			128,659.74

Source: Reports Submitted by Licensed Haulers and Collectors Under Executive Regulation 58-92AM

Figure 4.3
Facilities Accepting Out-of-jurisdiction C&D

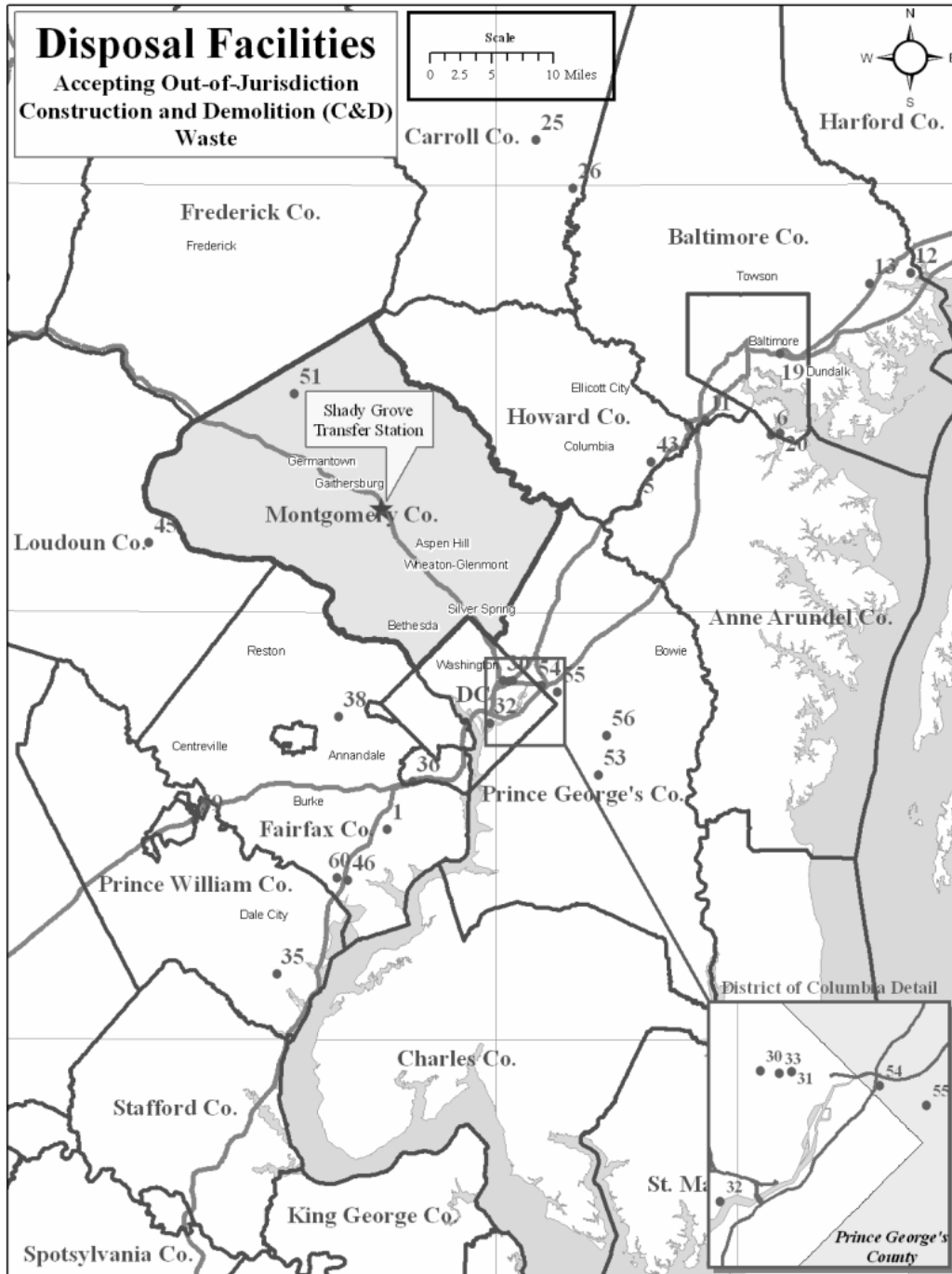


Table 4.6
Disposal Facilities Accepting Out-of-Jurisdiction C&D Materials

FAC_ID	Facility	County	State	Road Distance
1	Hilltop Sand and Gravel	Alexandria	VA	35
5	Annapolis Junction PF & TS	Anne Arundel	MD	25
6	Curtis Creek PF & TS	Anne Arundel	MD	39
11	Recovermat Mid-Atlantic, LLC PF	Baltimore	MD	31
12	Days Cove Rubble Landfill	Baltimore	MD	65
13	Honeygo Run Rubble Landfill SE	Baltimore	MD	61
19	Edison Processing Facility	Baltimore City	MD	51
20	Baltimore Procesing Facility and Transfer Center	Baltimore City	MD	40
25	Northern Landfill PF&TS	Carroll	MD	45
26	Roll-Off Express PF	Carroll	MD	64
30	Consolidated IPC (a.k.a) Federal IPC	District of Columbia	DC	24
31	Waste Management of MD, Inc (Northeast TS)	District of Columbia	DC	32
32	DC Rock, Washington	District of Columbia	DC	28
33	Rodgers Brothers	District of Columbia	DC	32
35	Potomac Landfill	Dumfries	VA	46
36	Alexandria Waste Recovery Facility	Alexandria	VA	31
38	Merrifield	Fairfax	VA	22
43	Ameriwave PF & TS	Howard	MD	35
45	Old Dominion Transfer Sstation	Leesburg	VA	37
46	Rainwater Landfill	Lorton	VA	37
51	C & D Recovery PF	Montgomery	MD	13
53	Dower House PF	Prince George's	MD	38
54	Kenilworth PF	Prince George's	MD	30
55	Sheriff Road PF & TS	Prince George's	MD	32
56	Ritchie Land Rubble LF	Prince George's	MD	34
59	Manassas Transfer Station	Prince William	VA	39
60	Lorton C D D Landfill	Lorton	VA	36

It should be noted that Figure 4-3 and corresponding Table 4-5 do not necessarily include processing facilities that are not required to be permitted by a local authority. Figure 4-3 maps all available privately run options in jurisdictions adjacent to Montgomery County in Maryland which are known to be accepting C&D type materials. With respect to facilities in Virginia and DC the map only shows those reported by private haulers as being or having been used for disposition of C&D generated within Montgomery County. As a consequence Figure 4-3 and Table 4-5 do not necessarily represent the total number of available facilities for C & D.

Needs Assessment and Plan Direction: As noted above, the amount of C&D generated in the County in FY08 was about 239,000 tons. Because this type of waste is a byproduct of construction, the generation rate of land clearing and demolition debris is linked, for planning projections, to population and employment increases. Thus, this amount is projected to increase, by FY 2019, to 267,874 TPY. With developable land comprising less and less of the County, it is postulated that the nature, or composition, of this type of waste may shift, with reductions in the proportion comprised of land clearing type materials (e.g. large stumps and earth) to a greater portion being comprised of tear-down and renovation type materials, which could increasing the challenge of recycling and disposal of that material.

As Figure 4-4 and Tables 4-3 and 4-4 show, there is no shortage of destinations other than Clarksburg or the County Transfer Station which can and do receive C&D generated in Montgomery County. However, only seven of the 39 facilities inventoried above are equipped for any level of processing for recycling C&D.

Based on the foregoing, no additional County program for C&D appears to be needed at present to provide disposal capacity for private sector generated C&D.

However, the County's hierarchical preference that waste be recycled rather than disposed dictates a planning direction with respect to C&D management. Specifically, the County will, to the maximum extent practicable, utilize its newly amended out-of-County haul contract to recycle the C&D that it receives at its transfer station, and also will continue to explore the fiscal and operational feasibility of increased recycling for land clearing and demolition debris generated from County roadway construction projects. In addition, the County should endeavor to more closely monitor and encourage private sector C&D recycling activities and opportunities.

It should be understood that C&D recycling does not influence the County's recycling rate calculation since C&D is not Municipal Solid Waste (MSW) and is not eligible for recycling credit under the Maryland Recycling Act.

4.2.2 Asbestos Disposal

Current Conditions and Constraints: Since the closing of the County's Oaks Landfill in 1997, The County's solid waste facilities no longer accept regulated asbestos-containing material (RACM) generated in the County. The County does not use its out-of-County landfill, in Brunswick County, VA, for RACM disposal either. Generators of this type of waste contact licensed and permitted asbestos contractors who are experienced in the proper removal, handling, transportation and disposal of RACM in a regulated disposal facility.

Needs Assessment and Plan Direction: There is no need for change to the existing County asbestos disposal policy.

4.2.3 Controlled Hazardous Substances

The term, "Controlled Hazardous Substances (CHS)," refers to hazardous waste as defined in COMAR 26.13.01 and special medical waste as defined in COMAR 26.13.11. These waste materials must be source separated from MSW and require special handling and disposal practices to protect public health and the environment. The management needs of hazardous waste and special medical waste are discussed below.

4.2.3.1 Hazardous Waste Management

Current Conditions and Constraints: Montgomery County generates less hazardous waste than many communities because of its relatively low level of industrial and manufacturing activity. County regulation requires any business that uses, stores, treats, or transfers 50 pounds or more of hazardous materials, including hazardous waste

to obtain a Hazardous Materials Use Permit and to register annually with the County DFRS, Local Emergency Planning Council (as mandated by Federal law). The WSSC regulates the industrial waste discharges into the sanitary sewer system.

All other hazardous waste regulations are implemented and enforced by the State and Federal governments. MDE uses a manifest system to regulate hazardous waste from its point of generation, through its transportation, interim processing and storage, and finally to its ultimate disposal facility. MDE has responsibility for the permitting of TSD facilities, including hazardous waste disposal facilities.

Businesses which generate less than 100 kilograms of hazardous waste (or 1 kilogram of acute hazardous waste) per month, or which store less than 100 kilograms of hazardous waste are considered "small quantity generators" and are exempt from most State hazardous waste management regulations. Small quantity generators operating in Montgomery County may be eligible to dispose of hazardous waste materials through a special drop-off collection program sponsored by DEP (see Section 4.1.6).

Needs Assessment and Plan Direction: No changes in the County's involvement in hazardous waste management are anticipated in the next decade.

4.2.3.2 Hazardous Waste Emergency Response

Current Conditions and Constraints: Under the County's Emergency Operations Plan, Annex P, the Montgomery County DEP is responsible for "detection, monitoring, sampling and analysis of water borne, land borne, and air borne hazards when releases of hazardous materials occur." In addition, Annex Z of this plan provides mandates for addressing hazardous material releases. Annex Z was written in accordance with the requirements of the Federal Superfund Amendments and Reauthorization Act. DEP also has coordination responsibility for addressing releases of hazardous material.

The Division of Environmental Policy and Compliance (DEPC) within DEP periodically updates a Response Procedures Manual to provide specific guidance dealing with releases of hazardous material. Items such as sewage releases are also included in the manual.

Hazardous waste spill incidents, when outside assistance is required, are reported through calls made to "911" within the County are referred to the County Emergency Communications Center. All spills are reported to MDE in accordance with the County's approved Storm Water Management Prevention Plans. The County DFRS hazardous incident response team responds to spills of oil and other hazardous substances. Larger spills may require assistance from the MDE spill team and/or a private cleanup contractor. DFRS is responsible for on-site materials containment and stabilization. Once DFRS has rendered the incident site safe, DEPC coordinates for the removal of the hazardous materials.

Under the County's Water Quality Ordinance (Montgomery County Code, Chapter 19, Section 19-50), DEP can issue fines for illegal dumping on County roads, rights-of-way, streams and storm drains. Through the County's Water Quality Ordinance, DEP established specific procedural guidelines to address any illegal storm drain connections. If an illegal storm drain connection is identified, DEPC may write a Notice of Violation to the responsible party and require corrective actions, including the cleanup of any spilled material and requiring a legal means of discharge. Enforcement of illegal connections is the responsibility of DEPC and the WSSC.

Needs Assessment and Plan Direction: The hazardous waste spill response system adequately serves County needs. No major structural modifications to the system are envisioned during the next 10 years.

4.2.3.3 Special Medical Waste

Current Conditions and Constraints: Special medical waste is generated by hospitals, doctors' offices, medical and research laboratories. State regulations govern the transport and disposal of special medical waste. Special medical waste must be transported by state-licensed haulers and processed at permitted facilities under a State manifest reporting system. Haulers transporting special medical waste within the County must have a County solid waste license.

State law provides a residential use exemption (e.g., for home insulin users) for disposal of home medication material as MSW.

Special medical waste incinerators operate under state permits. At present, no permitted special medical waste incinerators operate in Montgomery County (see Table 3.12).

DEPC enforces air quality provisions of the County Code, reviews State installation and operating permits, and works with the County DPS to enforce compliance with the ventilation requirements of County building standards in relation to any incinerator which operates in the County.

Investigations of improper disposal of special medical waste are conducted by DEPC. If suspicious waste is identified at the Transfer Station, the facility manager contacts DEPC. DEPC investigates and supervises the removal of any improperly disposed special medical waste.

Needs Assessment and Plan Direction: Aside from the licensing and investigative efforts listed in the paragraphs above, the County does not participate in special medical waste management or regulation. Currently all special medical waste generated in the County is processed at private facilities located outside of the County.

4.2.4 Animal Carcass Waste

Current Conditions and Constraints: There are no animal carcass waste rendering facilities in the County. In Fiscal Year 2008, private renders in Virginia and Pennsylvania processed an estimated 109 tons of animal carcasses, bone and fat originating from the County. In addition, one privately owned pet crematorium operates under State permit in the County.

Needs Assessment and Plan Direction: Rendering facilities primarily collect meat byproducts from farms, restaurants, institutions and grocery stores. Domestic pet carcass generators include the County's Animal Services Division in the Department of Police, the Montgomery County Animal Shelter, and pet crematoria. Given facility siting constraints, new rendering facilities and incinerators are unlikely to set up operation in Montgomery County. Over the next ten years, County animal waste generators likely will remain dependent on out-of-County rendering facilities.

4.2.5 Bulky Wastes

Current Conditions and Constraints: Bulky wastes include large household appliances (also known as white goods), other scrap metals and building materials. Bulky items are directed to different areas of the Transfer Station for recycling or disposal depending upon the materials. White goods and other scrap metals are sent to scrap metal dealers for recycling. Reusable building materials dropped off at the Transfer Station are picked up by a non-profit organization located in Baltimore, Maryland, for use in low income housing projects throughout Maryland. Other bulky items that are not suitable for disposal at the RRF are included with other non-processible waste sent for disposal at a private landfill in Brunswick County, Virginia.

As indicated in Chapter 3, County bulky waste generation in FY 2008 is estimated at 79,575 tons per year.

Needs Assessment and Plan Direction: Existing facilities and programs appear sufficient to accommodate bulky waste materials.

4.2.6 Automobiles

Current Conditions and Constraints: Two automobile parts salvage companies operate in Montgomery County. However, no full scale automobile recycling facilities exist within the County. Retired automobiles generally are hauled to auto recyclers located outside of the County. The Montgomery County Police dispose of abandoned vehicles primarily through public auction. The police send approximately ten automobiles per year to scrap dealers.

As indicated in Chapter 3, County scrap automobile generation is estimated at 59,361 tons per year.

Needs Assessment and Plan Direction: No further County involvement in automobile waste management appears warranted for the next decade.

4.2.7 Vehicle Tires

Current Conditions and Constraints: The State of Maryland developed a scrap tire program for the management of scrap tires in Maryland. Many auto service centers in the County arrange for private recycling of their customers' tires at facilities outside of the County. County residents may drop five or fewer scrap tires per year at the County's Transfer Station for recycling.

Needs Assessment and Plan Direction: The existing State scrap tire management system has sufficient capacity to recycle scrap tires generated in the County.

4.2.8 Wastewater Treatment Biosolids

Current Conditions and Constraints: In February 1999, WSSC ceased the delivery of biosolids to the Montgomery County Regional Composting Facility (MCRCF). The biosolids formerly being composted at the MCRCF have been directed to WSSC land application contractors. All local, State and Federal approvals for permanent closure have been received and WSSC has closed this facility.

The four wastewater treatment plants located in the County currently treat approximately 20 mgd of domestic wastewater and generate about 6,900 dry tons per year of biosolids.

There are currently six farms in the County with active permits issued by MDE authorizing Sewage Sludge Utilization for beneficial land use. These permits are held by Synagro Mid Atlantic, Inc., located in Baltimore, Maryland. Biosolids applied under these permits may originate from anywhere in the region. The testing standards and application guidelines for the land application of biosolids are regulated by MDE and the Maryland Department of Agriculture (MDA).

Needs Assessment and Plan Direction: The County will promote the recycling of the nutrients and organic material present in biosolids to benefit growth of crops and improve soils. Land application and composting are the preferred beneficial uses of biosolids. Disposal processes such as landfilling and incineration will not be used as the primary means of biosolids management.

4.2.9 Septage

Current Conditions and Constraints: Approximately 50,000 homes in Montgomery County use a private septic system rather than the public sanitary sewerage system. In addition, about two dozen homes rely on sewage holding tanks. Septic system tanks and holding tanks are periodically pumped by private haulers permitted by the County. Pumped sewage is discharged into the WSSC or other municipal sanitary sewerage systems at controlled entry points.

Using assumed tank capacities and discharge frequencies, the County estimates current and future septic and holding tank septage generation is 18,000 wet tons annually.

Needs Assessment and Plan Direction: Current septage management practices are being reviewed by WSSC and Montgomery County DEP. In 2009 WSSC expects to propose an updated management plan for the septage hauled to its facilities.

4.2.10 Other Wastes

Current Conditions and Constraints: As stated in Chapter 3, Montgomery County generates insignificant quantities of agricultural wastes and mining wastes.

Ferrous metals are extracted from the mix of RRF ash and residue and the remaining materials are transported to a privately operated MSW landfill in Brunswick County, Virginia.

Litter and recreational wastes are considered MSW and are processed along with all other MSW received at County facilities.

Street sweepings are included with the non-processible waste transported to a privately operated landfill in Brunswick County, Virginia.

Needs Assessment and Plan Direction: The County has established appropriate and sufficient facilities and programs for the management of agricultural wastes, mining wastes, litter, recreational wastes, and street sweepings. No significant change in the management of these wastes appears warranted during the life of this plan.

4.3 CONSTRAINTS ON NEW SOLID WASTE ACCEPTANCE FACILITIES

4.3.1 Physical Constraints on Waste Acceptance Facilities

Current Conditions and Constraints: Several physical characteristics of the land in Montgomery County influence the siting of new solid waste acceptance facilities. These constraints include: topography, soil types, geologic conditions, aquifers, wetlands and surface waters.

(a) Topography – The general topography of Montgomery County is illustrated by Figure 4.4. The County is dominated by a rolling plain or "low hill" landscape. Hills are concentrated in the northern part of the County and adjacent to the major stream valleys. The highest point in the County is 873 feet above sea level; the lowest point in the County is 52 feet above sea level. The average elevation gradient is 29 feet per mile.

In general, the effort and costs of site preparation for most solid waste facilities increase as the topographic variation increases. Council Resolution 11-787 (1988) established County criterion for preferred landfill topography specifying that "gently rolling uplands will be preferred as landfill sites to flat, steeply sloping, or valley bottom areas." The complete list of County landfill site selection criteria appears in Appendix C. Although grading costs may increase as a result, this criterion intends to avoid low, flat areas, where poor drainage could result in ground water or surface water problems. Steep areas would be prone to erosion; and valley bottom areas are crucial for watershed drainage and maintaining water quality.

(b) Soil Types³ – The soils of Montgomery County consist of one of six general descriptions. The locations of these soil types appear in Figure 4.5.

“Glenelg-Gaila-Occoquan” soils are nearly level to strong sloping, well drained, deep and very deep soils that are loamy throughout. This soil type is found in the central part of the County and extends to the east and south. It is found on broad ridgetops and side slopes. Glenelg-Gaila-Occoquan soils make up approximately 41 percent of the County.

“Brinklow-Baile-Occoquan” soils are nearly level to moderately steep, well and poorly drained, moderately deep soils that are loamy throughout. This soil type is found in the northern part of the County. It is found on broad ridgetops and side slopes. Brinklow-Baile-Occoquan soils make up approximately 16 percent of the County.

“Urban Land-Wheaton-Glenelg” soils are nearly level to strongly sloping, well drained, very deep soils that are loamy throughout. This soil type is found in primarily in the Germantown area and in southern and eastern portions of the County. It is found on broad ridgetops and side slopes. Urban Land-Wheaton-Glenelg soils make up approximately 16 percent of the County.

“Penn-Brentsville-Readington” soils are nearly level to steep, well and moderately well drained, moderately deep and deep soils that are loamy throughout. This soil type is found in the western part of the County. It is found on broad ridgetops and side slopes. Penn-Brentsville-Readington soils make up approximately 14 percent of the County.

“Blocktown-Brinklow-Linganore” soils are gently sloping to steep, well drained and moderately deep soils that are loamy throughout. This soil type is found in the northern

³ Source: Soil Survey of Montgomery County, Maryland, USDA Natural Resource Conservation Service in cooperation with the Montgomery Soil Conservation District, July 1995.

part of the County. It is found on broad ridgetops and side slopes. Blocktown-Brinklow-Linganore soils make up approximately 10 percent of the County.

“Chillum-Croom-Beltsville” soils are nearly level to steep, well drained and moderately well drained, very deep soils. This soil type is found in the eastern part of the County along the Prince George’s County line. It is found on broad ridgetops and side slopes. Chillum-Croom-Beltsville soils make up approximately 3 percent of the County.

(c) Geologic Conditions⁴ – The County lies almost entirely in the Piedmont physiographic province where the bedrock consists predominantly of metamorphic rocks of the Paleozoic age. Consolidated sedimentary rocks of Early Triassic age occupy a down-faulted basin in the western part of the County. On hills and ridges along the eastern border, small erosional remnants of unconsolidated Cretaceous sedimentary rocks extend westward from the Coastal Plain in Prince George's County (see Figure 4.6).

The bedrock in the eastern two-thirds of the Piedmont consists of rocks of the Wissahickon Group. The best example of these rocks is exposed in the quarry of Rockville Crushed Stone Company south of Hunting Hill. The serpentinite here is quarried for use as crushed stone aggregate. Quarries for building stone in the micaceous quartzite are located in several places of the western schist belt.

⁴ Source: "Bedrock Geology of Montgomery County," compiled by Jonathan Edwards, Jr., Maryland Geological Survey, Baltimore, MD. December 1992.

Figure 4.4
County Topographic Map

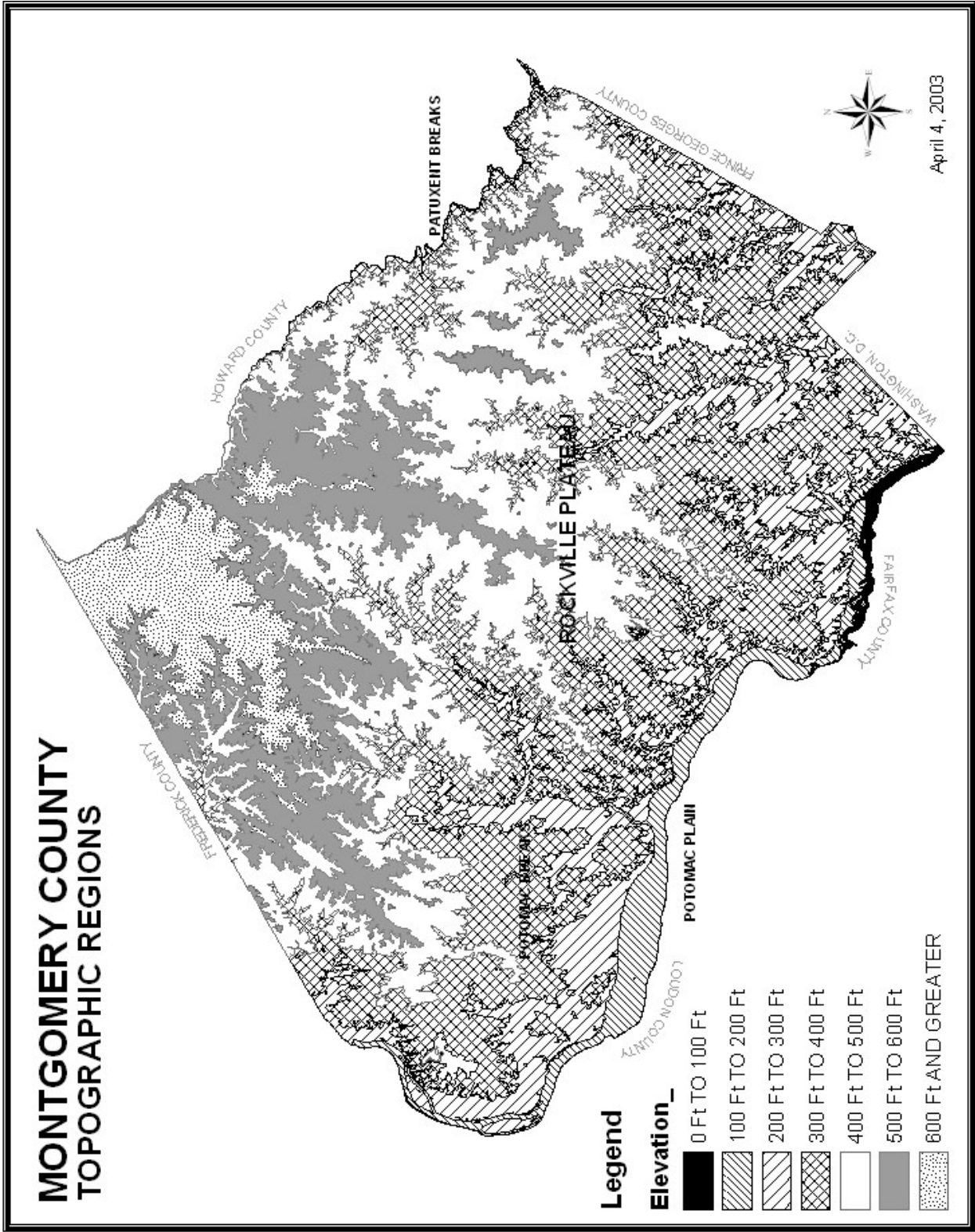
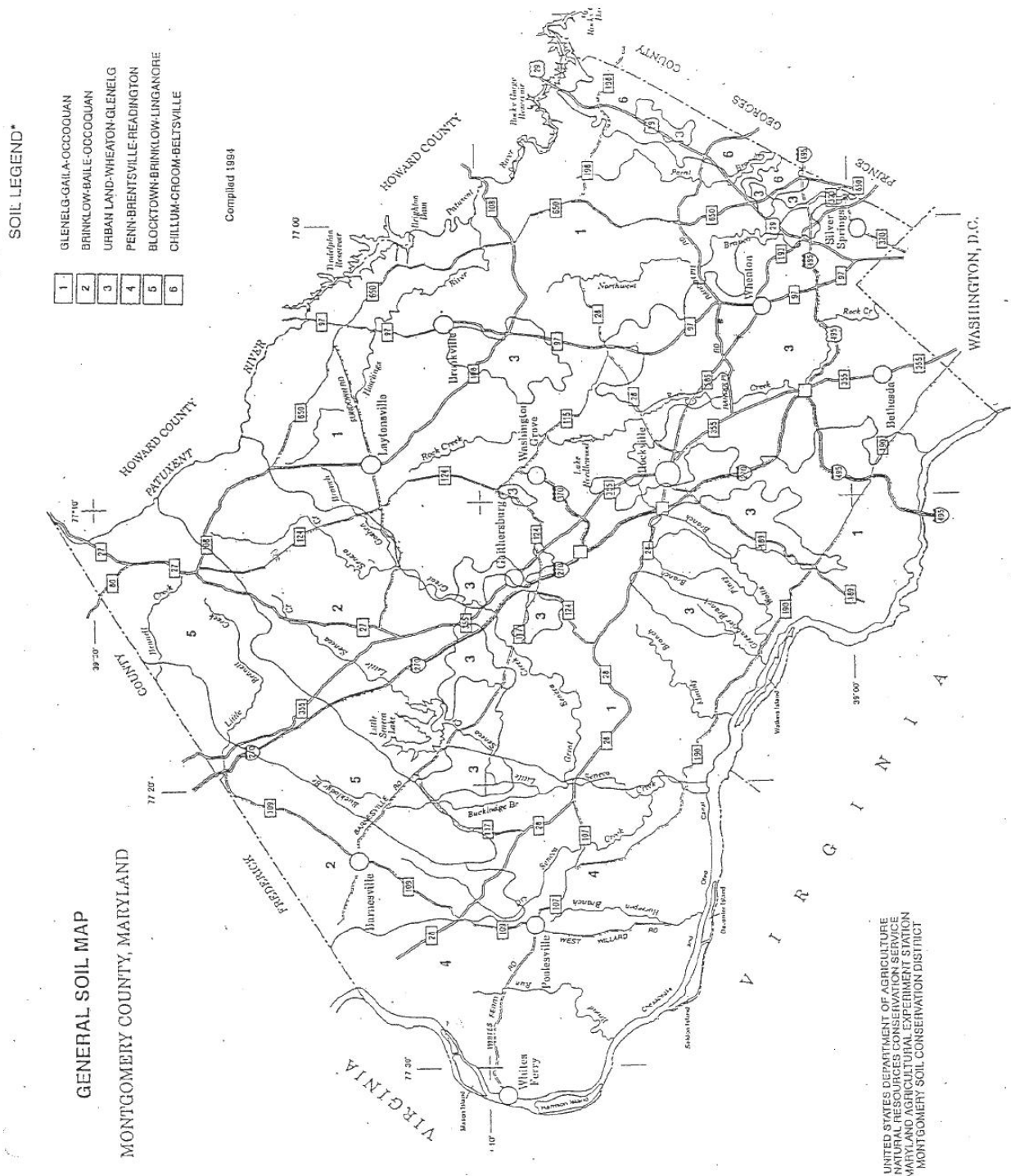


Figure 4.5
County General Soil Map



Fine-grained slaty rocks mapped as the Urbana (e.g., Harpers), Ijamsville, and Marburg phyllites occupy the Piedmont of Montgomery County west of a line running north-northeast from Blockhouse Point on the Potomac River to a point on the Patuxent River due north of Etchison, at Annapolis Rock. A large area in the western corner of the County is underlain by consolidated sedimentary rocks of Triassic age. This represents a small portion of the large Culpepper Basin in neighboring Virginia. Red Triassic sandstone was quarried for building stone at several places along the bluffs north of the Potomac River during the 19th century.

The general trend of the bedrock units across Montgomery County and the strike of the foliation and cleavage are northeast-southwest, but no one particular lithology appears to have had significant control on the topography.

Alluvial deposits consisting of gravel, sand, silt, and clay of recent age are present along the Potomac River, particularly in the wide bottomlands in the area of Triassic rocks west of Seneca. This alluvial fill is much less developed where the river channel has been cut into hard metamorphic rocks such as along the Potomac east of Seneca, along the Patuxent River, and in the larger streams tributary to these rivers.

A large remnant of a high-level gravel terrace lies on Triassic bedrock between Martinsburg Road and Elmer School Road in the western part of the County. These gravels are floodplain deposits of the Potomac River when it flowed at a higher level in the late Tertiary or early Quaternary time, before eroding to its present channel. Smaller patches of this same material occur to the south along the bluffs overlooking the floodplain of the Potomac River.

GENERALIZED BEDROCK GEOLOGIC MAP
OF
MONTGOMERY COUNTY, MARYLAND

Compiled by Jonathan Edwards, Jr.,
Maryland Geological Survey, 1992
Adapted from geologic maps of
Cloos and Cooke (1953) and Fruelich (1975)

Figure 4.6
County Geologic Conditions Map

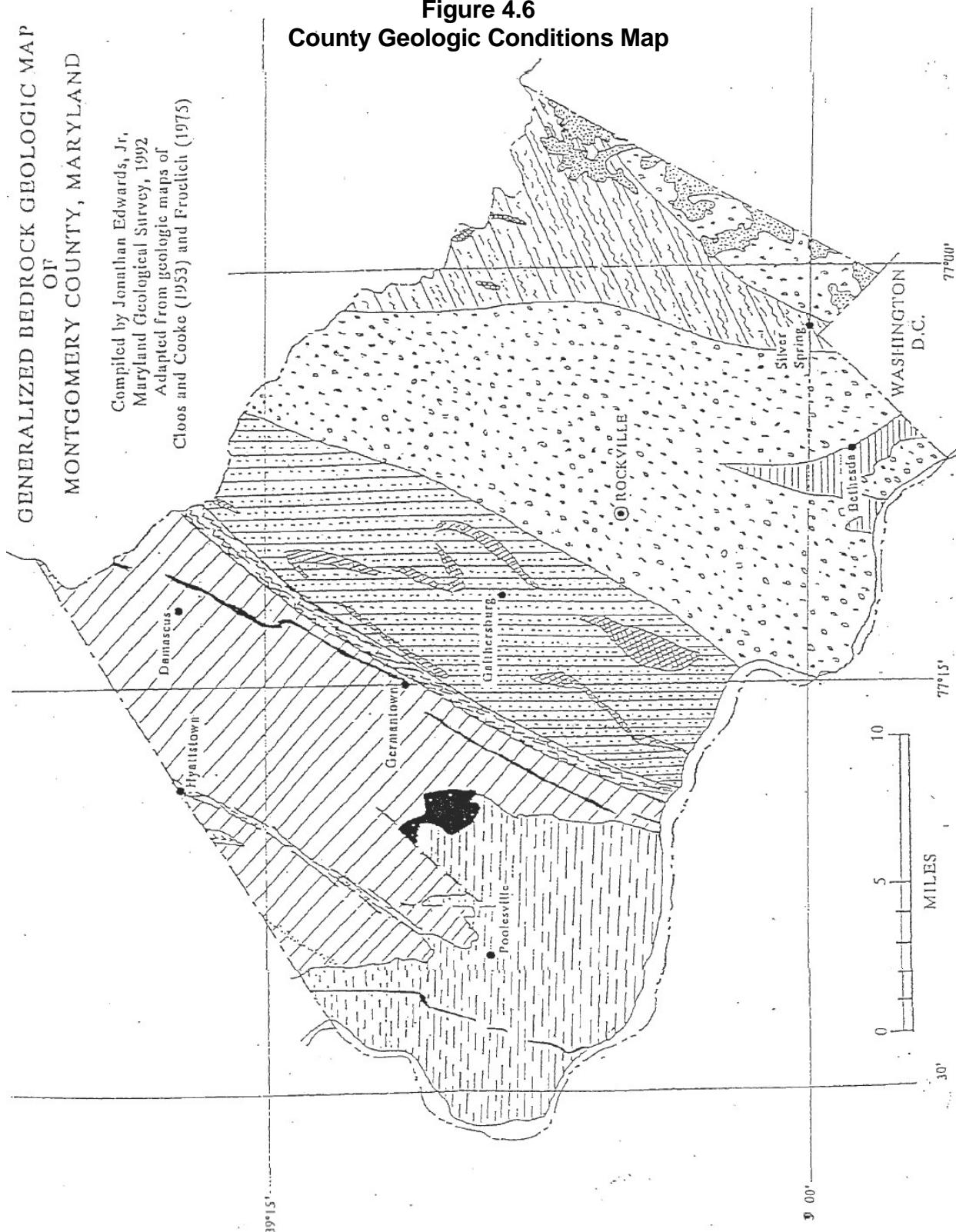


Figure 4.6 (con't)

EXPLANATION OF GEOLOGIC MAP

MESOZOIC

CRETACEOUS



Potomac Group: Unconsolidated deposits of quartz-pebble gravel; white, tan, and pink sand; and gray, white, tan, and pink clay of the Patuxent, Arundel, and Patapsco Formations

JURASSIC



Diabase Dikes and sills: Fine-grained, black basalt dikes and medium- to coarse-grained, black to dark greenish-gray diabase sill.

TRIASSIC



New Oxford Formation: Brick-red shale, siltstone, and red to gray sandstone. Cobble to pebble conglomerate at base.

EARLY PALEOZOIC



Pleasant Grove Formation: Fine-grained, dark greenish-gray metagraywacke and chlorite-muscovite-plagioclase-quartz phyllite*. Strongly sheared with tight internal isoclinal folds.



Marburg, Ijamsville, and Urbana Formations: Fine-grained, greenish-gray, gray-tan, and purple-gray phyllite. Some phyllites are interlaminated with thin, tan, fine-grained silty quartz layers.



quartzite: Fine- to medium-grained, gray-tan to white quartzite with rounded grains of quartz. Some layers of pebble conglomerate occur.



Georgetown Mafic Complex: Medium- to coarse-grained, dark green metagabbro, black amphibolite, and gray metadiorite.

Wissahickon Group:



Sykesville Formation and Laurel Gneiss: Gray, medium- to coarse-grained plagioclase-muscovite-quartz gneiss containing deformed and metamorphosed pebbles and boulders of vein quartz, mica schist, granite gneiss, serpentinite, and amphibolite. Occurs with schist and metagraywacke identical to those of the western facies of the Wissahickon.



ultramafic and related rocks: Medium- to fine-grained, green to black chlorite-actinolite schist, chlorite-talc schist, and serpentinite.



Eastern schist facies: Medium- to coarse-grained, gray to brownish-gray, garnet-bearing biotite-plagioclase-muscovite-quartz schist interlayered with biotite-muscovite-quartz-plagioclase gneiss.



Western schist facies: Fine-grained greenish-gray to gray, chlorite-muscovite-quartz-plagioclase schist.

LATE PRECAMBRIAN



Metabasalt (Sams Creek Formation): Fine-grained, chlorite-epidote schist and medium- to coarse-grained plagioclase-actinolite diabase.

* Mineral constituents listed in order of increasing abundance.

(d) Ground water and Aquifers⁵ – The major hydrogeologic units in the County are shown in Figure 4.7. Most of the ground water in these units occurs in the soil and weathered surface mantle which have an average thickness of 20-50 feet. Other ground water occurs in cracks and pores of the underlying rock.

The average annual depth of the ground water table in Montgomery County varies considerably from place to place depending on the type of rock, and the topographic situation as well as the annual rainfall. At an observation well at Fairland, in the Wissahickon schist of the eastern part of the County, average annual depth to ground water is between 8 to 10 feet. The comparable depth at an observation well at Damascus in the Ijamsville phyllite and a more rugged topography is between 30-45 feet. In the Manassas (New Oxford) siltstones and sandstones, the water table, as shown in scattered wells, lies at about 70-120 feet. However, this formation contains thin, saturated zones five to ten feet thick at lesser depths from which small quantities of water can be obtained. It is noteworthy that water at significantly greater depths in the Manassas formation has been reported from a well adjacent to the Potomac River. In general, however, the water in the ground lies chiefly in a surface zone about 150-250 feet thick.

The U.S. EPA designated parts of Montgomery, Frederick, Howard, and Carroll Counties as the Maryland Piedmont Aquifer. Areas in Montgomery County encompassed in this designation include the following drainage basins: Monocacy River, Little Seneca Creek above its confluence with Great Seneca Creek, and the Patuxent River above its confluence with Cabin Branch Creek. Most of these basins are underlain by crystalline igneous and metamorphic rocks of the Piedmont, although small areas of Triassic sedimentary rocks are also included along the lower reach of Little Seneca Creek and near Dickerson.

⁵ Sources: 1986 Comprehensive Montgomery County Water Supply and Sewerage Systems Plan; U. S. EPA, FR57165-168 (1980), as per the Sole Source Aquifer Program, established under Section 1424(e) of the Safe Drinking Water Act of 1974.

In February 1998, the U.S. EPA determined that the Poolesville Area Aquifer System “is the sole source or principal source of drinking water for this area and if the aquifer system were contaminated would create a significant hazard to public health.” The sole source designation subjects all federally assisted projects to EPA review to ensure that the project’s design, construction and operation will not contaminate the aquifer so as to create a significant hazard to public health.

(e) Wetlands – Regulations regarding the definition of, and allowable impacts to, wetlands continue to evolve. Wetlands are defined by the Planning Board's guidelines of February 1997 for Environmental Management of Development in Montgomery County as "an area that is inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as hydrophytic vegetation."

Information on the location of major wetland areas in the County is available through National Fish and Wildlife Service maps. The County's Department of Parks and Planning requires more accurate delineations of wetlands by a developer's engineer during the development review process. This detailed delineation is also required by federal and state agencies as a part of their wetland permit review processes.

In 1989, the Maryland Department of Natural Resources (DNR) prepared Nontidal Wetland Guidance Maps that showed the relative locations of large nontidal wetlands in Montgomery County. However, as stated in the instructions for the use of these maps, exact wetland boundaries and locations must be field determined using guidance that is provided by the Federal Government. Any new solid waste facility must address current Federal and State wetlands requirements.

(f) Surface Waters, Floodplains and Watersheds – The County's rivers, lakes, and streams provide drinking water, recreational opportunities, and wildlife habitat. Most

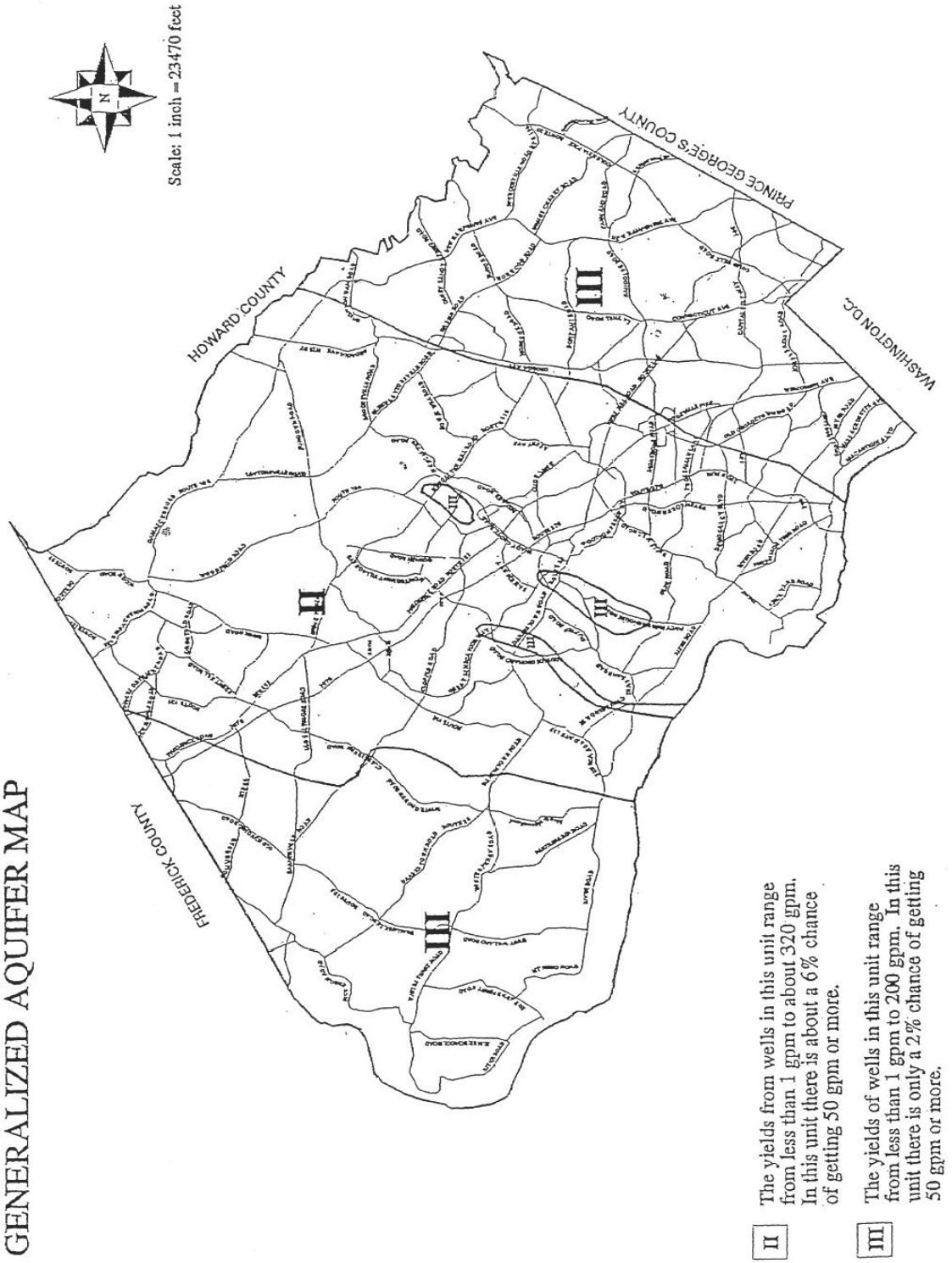
of this surface water comes from naturally occurring run-off from rain and snow. All of the lakes in the County are man-made. The larger lakes were built for flood and sediment control and water supply. Some County waters also are used to receive treated sewage and excess storm water run-off. Ultimately, all waterways flow into the Chesapeake Bay. The major surface drainage patterns are illustrated in Figure 4.8.

The County has 26 drainage basins, flowing into four rivers. The County is bordered by two rivers, the Potomac and the Patuxent. Seventy percent of the County drains directly into the Potomac River and its major tributaries. Twelve percent of the County drains to the Anacostia River and then to the Potomac River. Six percent of the County north of Comus Road and MD 121 (east of I-270) drain toward the Monocacy River and on to the Potomac River via Bennett and Little Bennett Creeks. The remaining twelve percent of the County along the Howard County line, northeast of Route 198 and New Hampshire Avenue, drains into the Patuxent River. The above-mentioned roads generally follow ridge lines.

Montgomery County Subdivision Regulations prohibit building in a one-hundred year flood plain, except for certain transportation structures. Flood plains comprise low lying areas expected to be inundated by floods recurring every 100 years. The Department of Parks and Planning has flood plain maps for most streams in the County. The Federal Emergency Management Agency also publishes maps of flood plain zones for the purposes of federal flood insurance programs. Flood plain location can affect the design of solid waste facilities. Engineering studies to identify the extent of flood plains have been performed for the RRF site and for the landfill property currently being held in reserve by the County.

Figure 4.7
County Hydrogeologic Units Map

**MONTGOMERY COUNTY
GENERALIZED AQUIFER MAP**



(g) Existing Water Quality Designations – MDE water quality standards identify water use designations for all surface waters in the County. Specific water quality criteria apply to each use designation. The use designation of County surface waters are listed below and shown in Figure 4.9.

- Use I Water contact recreation and protection of aquatic life: Waters which are suitable for: water contact sports, play and leisure time activities where the human body may come in direct contact with the surface water; fishing; the growth and propagation of fish (other than trout); other aquatic life, and wildlife; agricultural water supply; and industrial water supply.

- Use I-P Water contact recreation, protection of aquatic life and public water supply: Waters which are suited for all uses identified in Use I and are used as a public water supply.

- Use III Natural trout waters: Waters which are suitable for the growth and propagation of trout, and which are capable of supporting self-sustaining trout populations and their associated food organisms.

- Use III-P Natural trout waters and public water supply: Waters which include all uses identified for Use III waters and are used as a public water supply.

- Use IV Recreational trout waters: Waters which are capable of holding or supporting adult trout for put and take fishing, and which are managed as a special fishery by periodic stocking and seasonal catching (cold or warm waters).

Use IV-P Recreational trout waters and public water supply: Waters which include all uses identified for Use IV waters and are used as a public water supply.

Needs Assessment and Plan Direction: Limited sites remain in the County with physical characteristics which are suitable for development of large new solid waste facilities, particularly landfills. As described in the next section, both the physical characteristics of the land and previous land development patterns have reduced the availability of in-county locations appropriate for siting large new solid waste facilities. As such, the County has and will consider both in-county and out-of-County alternatives to meet its long-term solid waste facility needs (see next section and Chapter 5).

4.3.2 Land Use Constraints

Current Conditions and Constraints: The County regulates the siting of solid waste facilities through provisions of this Plan, the County Code (primarily Chapter 48), and the Zoning Ordinance.

The County Zoning Ordinance includes standards for solid waste facilities.⁶ The Zoning Ordinance restricts privately owned transfer stations, landfills, incinerators and recycling facilities to select industrial zones. The County Zoning Ordinance expressly prohibits privately owned and operated incinerators in industrial zones.⁷ Privately owned incinerators are allowed in industrial zones only if publicly operated.

⁶ This plan shall not be used to create or enforce local land use and zoning requirements.

⁷ See Section 59-C-5.22 of the County Zoning Ordinance.

Figure 4.8
Surface Drainage Patterns Map

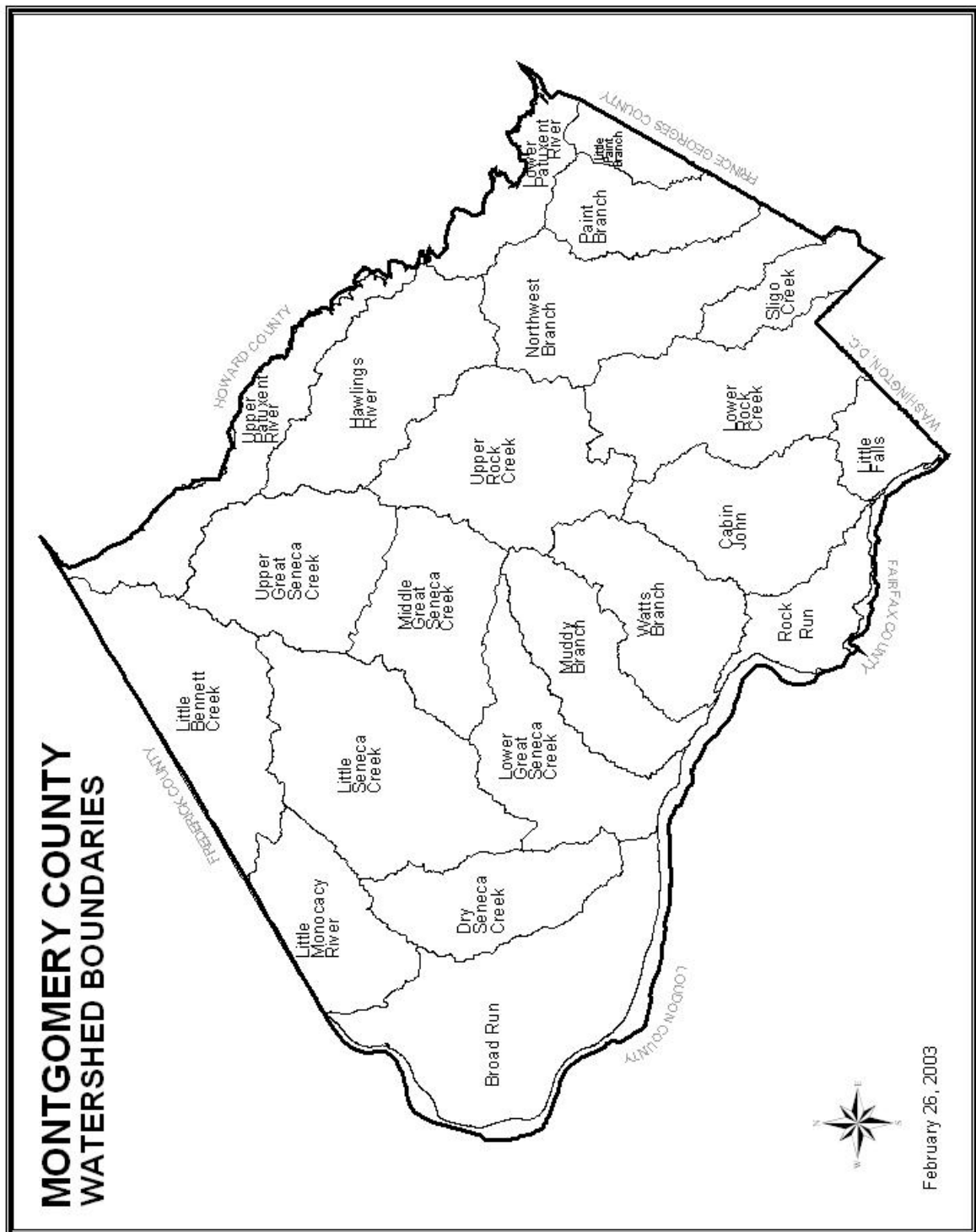


Figure 4.9



The Zoning Ordinance limits privately owned transfer stations, landfills and incinerators to the I-2 heavy industrial zone. Moreover, these facilities are permitted in the I-2 zone only if the County Board of Appeals grants a special exception determining that the specific I-2 parcel is suitable for a transfer station, landfill or incinerator. At present, no privately owned MSW transfer station, landfill or incinerator has satisfied both local land use requirements and MDE solid waste disposal facility permitting requirements. The County historically has reserved relatively small amounts of land for industrial uses. No more than seven vacant or re-developable (i.e., parcels where the value of the land exceeds the value of existing improvements) I-2 parcels of five acres or more exist in the County. The creation of new I-2 land seems unlikely during the life of this Plan given existing land use patterns as well as County and State land development policies.

The Zoning Ordinance allows a construction debris recycling facility in a Rural Service Zone provided that the facility meets special development standards set forth in Section 59-C-9.83 of the County Zoning Ordinance. These requirements set minimum standards for lot size, road frontage, distance to an interstate interchange, building set back, and on-site screening and landscaping. The facility also requires a construction debris recycling permit that satisfies the materials handling and reporting requirements of Section 59-C-9.84 of the County Zoning Ordinance.

Most of the southern and central portions of the County are unavailable for solid waste management uses given existing development and land use patterns. Extensive areas throughout the County, primarily along rivers and streams, are dedicated for parks and conservation purposes. A large portion of the northern land area of the County is designated as an Agricultural Reserve which is intended for the preservation of farmland and open spaces. The County Yard Trim Composting Facility, the RRF, as well as the land reserved for a potential future in-county landfill, are located within the Agricultural Reserve and in an area identified by the EPA as a Sole Source Aquifer (SSA) system. This designation requires that federally assisted projects in this area are subject to EPA review to ensure that the project's design, construction and operation will not contaminate

the aquifer so as to create a significant hazard to public health. Although this would not apply to a County financed project, these solid waste processing facilities must comply with State design and permit requirements that provide a high standard of environmental and public health protection.

A 1990 County study evaluated 16 in-county candidate landfill sites using 26 criteria adopted by the County Council in Resolution 11-787. County Council Resolution 11-1947 (1990) identified two potential future in-county landfill sites, "Site 2" in the vicinity of Dickerson, and another site in the vicinity of Boyds, both in the Agricultural Reserve. The County purchased 820 acres at Site 2 which will be held in reserve in the event economic conditions, changes in law or other circumstances render out-of-County waste disposal infeasible.

The County does not intend to site any new major solid waste processing facilities within the County during the next ten years. The sites for currently operating solid waste processing facilities as well as land reserved for potential future solid waste facility needs have been selected in the context of County land use master plans as discussed in Chapter 2 of this Plan. While only a few parcels of land use remain undeveloped in the County that are zoned to permit private solid waste processing facilities, existing solid waste processing facilities are adequate to handle projected waste generation for the next decade and beyond. Recent modifications to the County zoning ordinance will promote the suitable siting of new private recycling facilities in the County.

Needs Assessment and Plan Direction: The County's principal solid waste management facilities, including the RRF, the Yard Trim Compost Facility, the Shady Grove Processing Facility and Transfer Station and the MRF, have expected useful lives beyond the term of this Plan. The above land use constraints do not bear on the landfill used by the County, via contract, as it is located outside of the County. However, that facility has capacity has more than sufficient useful life for the planning period (see section 5.2.1.5.) as does the County's Site 2 back-up in-County landfill. Construction is currently

underway on landfill gas-to-energy projects at both the Gude and Oaks closed landfills in the County. These gas-to-energy projects became operational in mid-2009. The County is currently performing design work toward relocating its yard trim/wood waste operations away from the Transfer Station site to the closed Gude Landfill. This work is contingent upon future County Council appropriation, appropriate environmental and engineering assessments and MDE approval of this facility and its integration into the remediation plan and proposed future land uses for the site. Capital improvements to the Transfer Station were constructed in 2007 to enhance both facility safety and customer service. These capital improvements included the addition of two new truck scales to reduce waiting times, an addition to the transfer building, upgrades to the scale house, an additional citizen unloading bay, and road improvements. The final decisions on site improvements being designed for relocation of yard trim operations from the Transfer Station to an area of the Gude Landfill will be made during subsequent regulatory agency and CIP review of that design.

4.4 SOLID WASTE OUTREACH, EDUCATION AND PROMOTION

Education and promotion programs have become an essential component of the County's integrated solid waste management system. The County government has devoted considerable resources to solid waste education and outreach programs. Montgomery County residents and businesses receive information about their role in reducing waste, recycling, and using their purchasing power to support demand for recycled materials and products.

4.4.1 Public Outreach and Consumer Education

Current Conditions and Constraints: Montgomery County has conducted public information and outreach activities for many solid waste programs. The County has pursued an ongoing educational campaign to inform residents and businesses about

recycling, waste reduction, and other solid waste management concerns. These efforts include the following subject matter:

- Residential curbside recycling;
- Multi-family recycling;
- Non-residential recycling (by businesses, organizations, both for-profit and non-profit, and government facilities);
- Yard trim composting and grasscycling;
- Waste reduction;
- Reuse, including donation programs;
- Consumer and business purchase of recycled/recyclable products; and
- HHW reduction and proper disposal.

Outreach activities employ a variety of information dissemination techniques designed to deliver the message in a cost effective and appropriate, productive manner. Information and education efforts employ the following techniques:

- Tours of solid waste facilities including, the Transfer Station, MRF, Yard Trim Composting Facility, and RRF;

- Brochures and fact sheets specific to various programs (including commercial recycling, multi-family recycling, curbside recycling, special materials drop-offs, and HHW);
- A comprehensive Resident's Guide for recycling and solid waste services distributed to single-family residents;
- Development and distribution of specialized handbooks and resource guides (including the Business Recycling Handbook, the Multi-Family Recycling Handbook and the Handbook for Businesses Generating Small Quantities of Hazardous Waste);
- Video presentations regarding business recycling, residential recycling, recycling in schools, multi-family recycling, waste reduction, buying recycled products and backyard composting;
- Cable television programs featuring current topics in solid waste management;
- Targeted direct mail campaigns;
- Multi-media educational campaigns to increase recycling awareness;
- Presentations to civic groups, schools, chambers of commerce, business associations and at special events;
- Outreach through the Solid Waste Services website;
- Training of volunteers to provide peer recycling outreach to citizen groups;

- Educational materials and offerings in multiple languages, and utilizing graphics and illustrations to the maximum extent possible;
- Seminars and workshops on varied topics (including business recycling regulations and backyard composting techniques); and
- Incentives, including discount or free compost bins and lawn care products, to promote grasscycling and backyard composting.

On-going outreach activities include the Recycling Volunteer Program, the SORRT Program, the TRRAC Program, efforts to educate grasscycling and composting on-site, and a program to teach waste reduction and recycling in the County Public Schools.

Recycling Volunteer Program: This program is intended to increase citizen knowledge of, and participation in, County recycling, composting, grasscycling, waste reduction and HHW programs through effective use of community volunteers.

The County trains volunteer members of the community to perform several functions, including: (1) giving speeches and making presentations to civic associations, service clubs, and other organizations requesting information regarding the County's solid programs; (2) providing neighborhood-based waste reduction, recycling and buying recycled products information to peers; and (3) staffing recycling booths and exhibits at special events, such as the County Fair.

Recycling volunteers augment County resources through grass roots efforts to increase participation in the County's waste reduction and recycling programs. From its inception the Recycler/Composter citizen volunteers have contributed tens of thousands of hours of service and directly reached hundreds of thousands of people. The hours served by volunteers from 2005 are listed below.

<u>FY Year</u>	<u>Hours Served by Volunteers</u>
FY 2005	606
FY 2006	967
FY 2007	1,310
FY 2008	1,576

SORRT: The SORRT Program (Smart Organizations Reduce and Recycle Tons) serves as an information network that promotes and supports business recycling. Through SORRT, the County provides businesses, government agencies and private institutions with technical support, education materials, seminars and workshops and other guidance to advance waste reduction, recycling and procurement of recycling materials and products in the non-residential sector.

The SORRT Program reaches thousands of County businesses and organizations annually. A 1997 study determined that the average business or organization which directly received technical assistance through the SORRT program increased its recycling by 82 tons per year over the level achieved prior to their participation in SORRT.

TRRAC: The TRRAC Program (Think Reduce and Recycle at Apartments and Condominiums) serves as an information network that promotes and supports recycling in multi-family apartment and condominium developments. Through TRRAC, the County provides building owners, managers and residents with technical support, education materials, seminars and workshops and other guidance to advance waste reduction, recycling and procurement of recycling materials and products in multi-family residential buildings.

Waste Reduction and Recycling Education in Public Schools: DEP provides waste reduction and recycling outreach and education upon request by specific schools or teachers. In addition, DEP will support individual teachers who request assistance in developing, reviewing, updating or using instructional materials on waste reduction and

recycling. As mentioned in Chapter 1, the County expects all public agencies including the public school system to comply with all waste reduction and recycling requirements imposed on County businesses.

The Department will appraise the effectiveness of alternative education and outreach strategies and will focus its efforts on initiatives quantifiably demonstrated to have measurable positive effect on recycling performance. The Executive's annual operating budget submission must include summary findings of participation studies, focus groups, surveys and other research used to evaluate the effectiveness of alternative techniques and must describe how these findings justify the specific outreach, education, and technical assistance proposed for funding in the upcoming fiscal year.

Needs Assessment and Plan Direction: As indicated in Chapter 3, the County recycled over 44 percent of its MSW stream in FY08, continuing a steady climb. This rate has been achieved by creating recycling programs and by encouraging residents and employees to participate in the programs. The County recognizes that on-going outreach and education efforts are a critical element in both maintaining and expanding recycling and waste reduction achievements. Public outreach and education will play a central role in County strategies to meet its goal of 50 percent recycling (see Chapter 5).

4.4.2 Recycled Goods Procurement

Current Conditions and Constraints: Section 11B-56 of the Montgomery County Code includes the County goal that recycled paper and paper products should constitute at least 50 percent of the total dollar value of paper and paper products purchased by or for the County government. The same section of the County Code also mandates that County agencies either require the use of goods containing recycled materials or use of a percentage price preference (up to 10 percent) for recycled materials when purchasing goods. The Office of Procurement reviews all purchasing agreements to ensure compliance with the requirements of the County Code. DEP

distributes information on the availability of products containing recycled materials to County businesses and municipalities to encourage them to use these materials.

Needs Assessment and Plan Direction: The Office of Procurement and DEP will take all practicable efforts to promote maximum use of recycled materials by County agencies.

4.4.3 Promotion of Recovered Material Markets

Current Conditions and Constraints: County procurement regulations requiring the use of materials containing recycled materials promote the development of the recycled products market. Furthermore, the SORRT and TRRAC Programs promote recycling market development by encouraging County businesses and organizations to purchase recycled materials and products. County consumer education and outreach campaigns endorse “environmental shopping,” including the purchase of products with recycled content.

Contractual arrangements between the County and those entities which market County collected recyclables provide incentives for the vendor to obtain the best market price and to minimize the amount of residue (non-marketable) material generated.

The County RRF produces ash equal to approximately 25 to 30 percent (by weight) of the inputted solid waste. Reuse of ash for secondary purposes is a developing technology.

Needs Assessment and Plan Direction: The County will continue to promote the development of markets for recyclable materials through County procurement requirements, and outreach efforts to the residential and business communities.

The County will continue to manage its recycling contract to maximize materials recovery. The County will evaluate the feasibility and cost effectiveness of the reuse of RRF ash in road aggregate, construction materials and other specialized products.

4.5 INVESTIGATION OF COMPLIANCE ISSUES AND ENFORCEMENT OF RECYCLING REGULATIONS

Montgomery County Executive Regulation 15-04AM mandates recycling in Montgomery County. The goal of the County is for compliance with the recycling requirements. In order to ensure compliance with the County's recycling regulation by the multi-family and non-residential sectors, DSWS has dedicated staff (Recycling Investigators) responsible for investigating and applying enforcement measures as necessary and appropriate to enforce the County's recycling laws.

DSWS uses a progressive method of ensuring compliance with the recycling regulation. This process begins with DSWS outreach and education to ensure awareness and understanding of the requirements. DSWS uses technical assistance, training and hands-on guidance, and further provides tailored and specific recommendations on how a multi-family (apartment and condominium) property or a business can set-up, maintain and expand their recycling program in compliance with the regulation. In instances where these techniques do not bring about compliance by a multi-family property or business, DSWS has the authority, ability and responsibility to use stronger means of enforcement to bring about compliance. Again, there is a progression of methods used, beginning with verbal warnings, notices of violation, and citations (which include levying of fines).

4.6 SYSTEM APPROACH TO GREENHOUSE AND OZONE-RELATED EMISSIONS

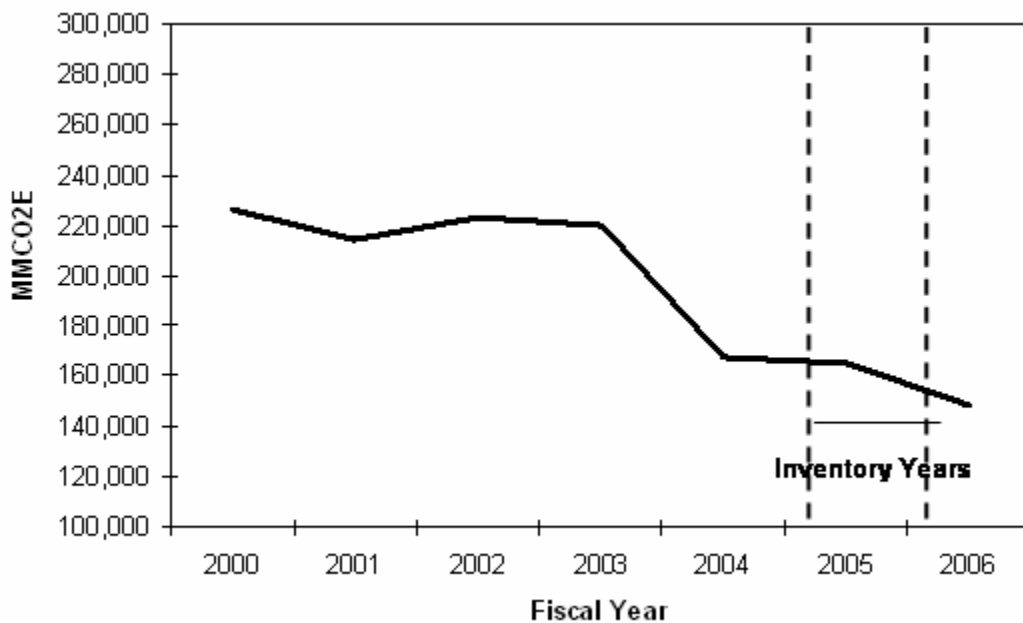
Montgomery County is dedicated to the goal of providing healthy and sustainable communities, and solid waste management plays a part.

4.6.1 Greenhouse Gas (GHG) Emissions

A scientific consensus has arisen that carbon dioxide (CO₂) and other greenhouse gases (GHG) released into the atmosphere will have a profound effect on the Earth's climate. From that growing understanding, and a sense of responsibility to do what it can in the fight to manage global warming, Montgomery County has aspired to a leadership position since 1999 when the County first became a member of the International Council for Local Environmental Initiatives, Cities for Climate Protection Campaign (CCP). Most recently Montgomery County has reaffirmed its commitments via the Cool Counties – Climate Stabilization Declaration. This pivotal Declaration signed by 36 leading Counties committed Montgomery County to 80 percent reductions in GHG emissions by 2050 with aggressive interim goals of 10 percent reductions every five years, this initiative was further formalized by Council Bill 32-07 which created a Sustainability Working Group to develop a detailed climate action plan.

Current Conditions and Constraints: DEP's Climate Action Team has already taken the first steps in reviewing local greenhouse gas emissions, and has estimated, as shown in Figure 4-10, below, that waste management activities contribute approximately 165,166 million tonne CO₂-equivalent net GHG emissions for baseline year 2005. DEP further estimates that this amount represents approximately one to two percent of countywide GHG emissions. In reality, the actual emissions from this sector may be significantly less, or even negative, due to the County's robust recycling and waste management efforts and the difficulty in evaluating the upstream GHG reductions from this important resource recovery.

Figure 4.10
Net GHG Emissions (MMTCO₂-e) from Solid Waste Management in the County



One constraint on the task of making such evaluations is that the computer models and protocols available for complex functions such as waste management are in a state of flux. For example, the current model provided by International Council for Local Environmental (ICLEI), of which the County is a member, employs embedded coefficients and algorithms that are subject to updates from time to time as knowledge improves. A full update to the ICLEI model is not expected for at least another six months. Thus, the results, at least at the current time, need to be treated with some forbearance, and largely as a measure of relative emissions and not absolute emissions. A second constraint, at least with respect to the ICLEI model licensed to DEP, is that the scope of activities which the model recognizes within its “waste management” sector, while holistic in many respects, does not include the activity of waste collection, nor any aspect of the intra-facility vehicular transportation (rail and truck hauling), or upstream benefits from the recovery of materials via recycling which considerable activity is intrinsic to Montgomery County’s solid waste management system. Emissions from these activities are understood to be implicitly estimated by the model but reported out within other large

sectors of the ICLEI model (e.g. “community” or “transportation”) and cannot be isolated for recognition as part of waste management. A third and related constraint may be the relative unavailability of data needed to assess emissions from private waste collection vehicles and activities, as compared to that associated with County contract vehicles and activities for which information may be more readily available. As the ICLEI model is improved, or superseded by other protocols and tools, these estimates may change, however any changes will need to be reconciled back to the baseline year of 2005.

Needs Assessment and Plan Direction: Montgomery County’s solid waste management system is comprised of a great variety of inter-related activities. In addition to that which the County’s ICLEI model recognizes, a system-wide GHG emission inventory of Montgomery County solid waste management will need to account specifically for net emissions from: waste collection activities, the intra-facility vehicular transportation (e.g. rail and truck hauling), and other emissions intrinsic to the scope of Montgomery County’s integrated solid waste management. Such an accounting will be designed to complement the County’s ongoing ICLEI-based GHG inventory and modeling efforts. Such solid waste system-wide inventory will aid in assessing any significant net GHG impacts of future changes in the solid waste management system. Special efforts may be needed to gather data related to private sector waste collection.

4.6.2 Ozone-Related Emissions

Montgomery County is located in a non-attainment area with respect to National Ambient Air Quality Standards (e.g. for 8-hour ground level ozone). As has been noted, the County’s solid waste management system is comprised of many and various interrelated components. Collection trucks, intra-facility transfer trucks and trains, facility processes, equipment and intra-facility rolling stock, etc. — all contribute to ozone-related emissions (e.g. nitrogen oxides and volatile organic carbon). Reducing these emissions can contribute toward attaining a healthier community.

Current Conditions and Constraints: Any combustion process produces nitrogen oxides (NO_x). This includes vehicles with internal combustion engines and any power generation based on combustion. Possibly the largest single source of NO_x within the County solid waste system is the County's RRF, which typically emits a little over 1,000 tons per year of NO_x. The County is currently pursuing a capital improvement program at the RRF expected to substantially reduce NO_x emissions. As noted above, the County's solid waste management system is comprised of many and various interrelated components. Many other components involve combustion, with attendant NO_x emissions, and also some significant sources of VOC emissions.

Needs Assessment and Plan Direction: In order to identify additional opportunities to assist with ozone-related emission reductions, the County should develop a solid waste system-wide emission generation inventory tool. Such a tool could be used to aid in evaluating impacts of future changes in the solid waste management system and public outreach.